



United States  
Environmental Protection  
Agency

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# **2015 Annual Effluent Guidelines Review Report**

June 2016

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U.S. Environmental Protection Agency  
Office of Water (4303T)  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460

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## **1. INTRODUCTION TO EPA'S 2015 ANNUAL REVIEW**

Effluent limitations guidelines and standards (ELGs) are an essential element of the nation's clean water program, which was established by the 1972 amendments to the Federal Water Pollution Control Act (which then became known as the Clean Water Act (CWA)). ELGs are technology-based regulations used to control industrial wastewater discharges. EPA issues ELGs for new and existing sources that discharge directly to surface waters, as well as those that discharge to publicly owned treatment works (POTWs) (indirect dischargers). ELGs are applied in discharge permits as limits to the pollutants that facilities may discharge. To date, EPA has established ELGs to regulate wastewater discharges from 58 point source categories. This regulatory program substantially reduces industrial wastewater pollution and continues to be a critical aspect of the effort to clean the nation's waters.

In addition to developing new ELGs, the CWA requires EPA to revise existing ELGs when appropriate. Over the years, EPA has revised ELGs in response to developments such as advances in treatment technology and changes in industry processes. To continue its efforts to reduce industrial wastewater pollution and fulfill CWA requirements, EPA conducts an annual review and effluent guidelines planning process. The annual review and planning process has three main objectives: (1) to review existing ELGs to identify candidates for revision, (2) to identify new categories of direct dischargers for possible development of ELGs, and (3) to identify new categories of indirect dischargers for possible development of pretreatment standards.

This report documents EPA's methodology and findings from its 2015 Annual Review. The 2015 Annual Review consisted of three components:

- Conducting a toxicity ranking analysis (TRA) using data from discharge monitoring reports (DMRs) contained in the Integrated Compliance Information System for the National Pollutant Discharge Elimination System (ICIS-NPDES), and the Toxics Release Inventory (TRI). The TRA identifies and prioritizes for further review those industrial categories whose pollutant discharges pose the greatest hazard to human health and the environment relative to other categories. EPA evaluates the relative hazard of these discharges by applying toxic weighting factors (TWFs) to the annual pollutant discharges to calculate the total discharge of toxic pollutants as toxic-weighted pound equivalents (TWPE). See Section 2 of this report for details of the TRA.
- Conducting preliminary category reviews for the industrial categories with the highest hazard potential (in terms of TWPE) identified from the TRA. EPA uses the preliminary category reviews to further evaluate and identify categories that may warrant additional review and study or possible effluent guidelines and standards revision or development. See Section 3 of this report for details on the individual preliminary category reviews.
- Reviewing additional industrial categories and pollutants brought to EPA's attention through public and stakeholder comments and input, to evaluate recent changes within the industries as well as potential new pollutant releases to the environment through industrial wastewater discharge that may not be adequately regulated by

current ELGs. See Section 4 of this report for details on EPA's review of additional industrial categories and pollutants.

The 2015 Annual Review supports EPA's Office of Water's *Preliminary 2016 Effluent Guidelines Program Plan* (Preliminary 2016 Plan) (U.S. EPA, 2016). The Preliminary 2016 Plan, pursuant to Section 304(m) of the CWA, provides background on the CWA and ELG planning process, summarizes the results of the 2015 Annual Review, and details EPA's proposed actions and follow-up. The Preliminary 2016 Plan also identifies any industrial categories newly selected for effluent guidelines rulemaking, and provides a schedule for such rulemaking.

## **1.1 Introduction References**

1. U.S. EPA. 2015. *Final 2014 Effluent Guidelines Program Plan*. Washington, D.C. (July). EPA-821-R-15-001. EPA-HQ-OW-2014-0170-0210.
2. U.S. EPA. 2016. *Preliminary 2016 Effluent Guidelines Program Plan*. Washington, D.C. (June). EPA-821-R-16-001. EPA-HQ-OW-2015-0665. DCN 08208.

## 2. EPA’S 2015 TOXICITY RANKINGS ANALYSIS (TRA)

Consistent with its odd year review methodology,<sup>1</sup> EPA performed a TRA of all industrial categories, including those subject to existing effluent limitations guidelines and standards (ELGs) and those not currently regulated by ELGs, to identify and prioritize for further review categories whose pollutant discharges may pose the greatest hazards to human health or the environment relative to other categories.

As a first step in the TRA, EPA downloaded 2013 industrial rankings data from the “Top Industrial Dischargers of Toxic Pollutants” area of the DMR Pollutant Loading Tool (the Loading Tool)<sup>2</sup>. EPA used 2013 data to form the basis for the TRA because they represented the most recent and complete set of industrial wastewater discharge data available at the time of the 2015 Annual Review. Section 2.1 describes the industrial rankings data sources and their limitations in detail.

Next, EPA performed a quality review of the data, as discussed in Section 2.2, in order to identify and correct data errors and understand potential outliers. As described in Section 2.3, EPA imported the corrected data into a set of static databases to create the final 2015 point source category rankings. Section 2.4 presents the final 2015 point source category rankings, which EPA used to prioritize categories for further preliminary review. Section 3 of this report presents the methodology for, and findings from, EPA’s preliminary category reviews.

### 2.1 Data Sources and Limitations

The Loading Tool estimates the load of pollutants discharged from specific facilities using a combination of discharge monitoring report (DMR) data, from the Integrated Compliance Information System for the National Pollutant Discharge Elimination System (ICIS-NPDES), and Toxics Release Inventory (TRI) data.<sup>3</sup> TRI and DMR data do not identify the effluent guideline(s) applicable to a particular facility. However, TRI classifies facilities by North American Industry Classification System (NAICS) code, while ICIS-NPDES classifies facilities by Standard Industrial Classification (SIC) codes. Thus, the Loading Tool relates each SIC and NAICS code to an industrial category.<sup>4</sup> It also assigns a relative toxic weighting factor (TWF) to the estimated loads from each facility to calculate the total discharge of toxic pollutants as toxic weighted pound equivalents (TWPE).<sup>5</sup>

The Loading Tool then sums the TWPE for each facility in an industrial category to calculate a total TWPE per category and ranks the categories according to their total TWPE discharged. The Loading Tool’s industrial rankings are calculated using the same methodology

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<sup>1</sup> EPA’s odd year review methodology is further discussed in the *Preliminary 2016 Effluent Guidelines Program Plan* (Preliminary 2016 Plan) (U.S. EPA, 2016).

<sup>2</sup> See the [DMR Pollutant Loading Tool](#), which presents the top industrial dischargers of toxic pollutants. EPA used this section of the DMR Pollutant Loading Tool to inform its 2015 TRA.

<sup>3</sup> Consistent with the methodology presented in the *Technical Support Document for the Annual Review of Existing Effluent Guidelines and Identification of Potential New Point Source Categories* (2009 Screening-Level Analysis (SLA) Report (U.S. EPA, 2009).

<sup>4</sup> For more information on how EPA related each SIC and NAICS code to an industrial category, see Section 5.0 of the 2009 SLA Report (U.S. EPA, 2009).

<sup>5</sup> See a full overview of the [DMR Pollutant Loading Tool](#).

presented in the 2009 Screening Level Analysis (SLA) Report (U.S. EPA, 2009), except for one change to the selection of DMR measurement data from ICIS-NPDES.<sup>6</sup> The calculations specific to the Loading Tool are documented in the *Technical Users Background Document for the Discharge Monitoring Report (DMR) Pollutant Loading Tool* (U.S. EPA, 2012a).

This section provides general information on the use and limitations of the data sources the Loading Tool uses to generate the industrial rankings. These data sources include:

- SIC codes
- NAICS codes
- TWFs
- DMR data from ICIS-NPDES
- TRI data

### **2.1.1 SIC Codes**

The SIC code system was developed to help with the collection, aggregation, presentation, and analysis of data from the U.S. economy (OMB, 1987). The different parts of the SIC code signify the following:

- The first two digits represent the major industry group.
- The third digit represents the industry group.
- The fourth digit represents the industry.

For example, major SIC code 26 (Paper and Allied Products) includes all pulp, paper, and paperboard manufacturing operations. Within SIC code 26, the three-digit SIC codes are used to distinguish the type of facility: 263 for paperboard mills, 265 for paperboard containers and boxes, etc. Within SIC code 265, the four-digit SIC codes are used to separate facilities by product type: 2652 for setup paperboard boxes, 2653 for corrugated and solid fiber boxes, etc.

Although developed to track economic data, the SIC system is used by many government agencies, including EPA, to promote data comparability. In the SIC system, each establishment is classified according to its primary economic activity, which is determined by its principal product or group of products. An establishment may have activities in more than one SIC code. Some data collection organizations track only the primary SIC code for each establishment. ICIS-NPDES includes one four-digit SIC code, reflecting the principal activity causing the discharge at each facility.

EPA does not define the applicability of its ELGs by SIC code, but by industry and process descriptions. For this reason, regulations for an individual point source category may apply to one SIC code, multiple SIC codes, or a portion of the facilities in a SIC code. Therefore, to use data that identify facilities by SIC code, EPA mapped each four-digit SIC code to an appropriate point source category, as summarized in the “SIC/Point Source Category Crosswalk”

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<sup>6</sup> The Loading Tool incorporates one change to the selection of DMR measurement data from ICIS-NPDES, described in Section 3.1 of the *2013 Annual Effluent Guidelines Review Report*, which deviates from the methodology described in the 2009 SLA Report (U.S. EPA, 2014a).

table (Table C-1 in Appendix C). The Loading Tool applies this crosswalk to generate the industrial rankings.

EPA has not established national ELGs for all SIC codes. Table C-2 in Appendix C lists the SIC codes for which facility discharge data are available in ICIS-NPDES, but for which EPA could not identify an applicable point source category. For a more detailed discussion, see Section 6 of the 2009 SLA Report (U.S. EPA, 2009).

### 2.1.2 NAICS Codes

In 1997, the U.S. Census Bureau introduced the NAICS code system, to better represent the economic structure of countries participating in the North American Free Trade Agreement and to remedy deficiencies of the SIC code system. The nomenclature and format of NAICS and SIC codes are presented in Table 2-1.

**Table 2-1. Nomenclature and Format of NAICS and SIC Codes**

NAICS		SIC	
2-digit	Sector	Letter	Division
3-digit	Subsector	2-digit	Major group
4-digit	Industry group	3-digit	Industry group
5-digit	NAICS industry	4-digit	Industry
6-digit	U.S.-specific industry	N/A	N/A

For example, below are the SIC and NAICS codes for the folding paperboard box manufacturing industry.

In the SIC code system, the classification is less stratified:

- D: Manufacturing;
  - 26: Paper and Allied Paper Products;
    - 265: Paperboard Containers and Boxes;
      - 2657: Folding Paperboard Boxes, Including Sanitary (except paperboard backs for blister or skin packages).

In the NAICS code system the classification is more stratified:

- 32: Manufacturing;
  - 322: Paper Manufacturing;
    - 3222: Converted Paper Product Manufacturing;
      - 32221: Paperboard Container Manufacturing;
        - \* 322212: Folding Paperboard Box Manufacturing.

The NAICS system is used for industrial classification purposes at many government agencies, including EPA. As in the SIC system, each establishment is classified according to its primary economic activity, which is determined by its principal product or group of products. An establishment may have activities in more than one NAICS code.



EPA does not define the applicability of its ELGs by NAICS code, but by industry and process descriptions. For this reason, regulations for an individual point source category may apply to one NAICS code, several NAICS codes, or a portion of the facilities in one NAICS code. Therefore, to use data that identify facilities by NAICS code, EPA mapped each six-digit NAICS code to an appropriate point source category, as summarized in the “NAICS/Point Source Category Crosswalk” table (Table C-3 in Appendix C). The Loading Tool applies this crosswalk to generate the industrial rankings.

There are some NAICS codes for which EPA has not established national ELGs. Table C-4 in Appendix C lists the NAICS codes for which facility discharge data are available in TRI, but for which EPA could not identify an applicable point source category. For a more detailed discussion, see Section 6 of the 2009 SLA Report (U.S. EPA, 2009).

### **2.1.3 Toxic Weighting Factors**

As part of the Effluent Guidelines Program, EPA developed a wide variety of tools and methods to evaluate effluent discharges. Among these tools is a Toxics Database compiled from over 100 references for more than 1,900 pollutants. The Toxics Database includes aquatic life and human health toxicity data, as well as physical and chemical property data. Each pollutant in this database is identified by a unique Chemical Abstract Service (CAS) number. EPA uses the Toxics Database to calculate a pollutant-specific TWF that accounts for differences in toxicity across pollutants and allows comparison of mass loadings of different pollutants. The Loading Tool uses TWFs to calculate a “toxic-equivalents” loading (in pounds-equivalents per year). The Loading Tool multiplies a mass loading of a pollutant in pounds per year by the TWF to derive a TWPE. The *Toxic Weighting Factors Methodology* memorandum discusses the use and development of TWFs in detail (U.S. EPA, 2012c).

EPA derives TWFs from chronic aquatic life criteria (or toxic effect levels) and human health criteria (or toxic effect levels) established for the consumption of fish. In the TWF method for assessing water-based effects, these aquatic life and human health toxicity levels are compared to a benchmark value that represents the toxicity level of a specified pollutant. EPA chose copper, a metal commonly detected and removed from industrial effluent, as the benchmark pollutant (U.S. EPA, 2012c). During the 2015 Annual Review, EPA did not revise any TWFs or develop TWFs for chemicals that had not previously had them.<sup>7</sup>

### **2.1.4 Data from ICIS-NPDES**

EPA has used DMR data reported to EPA's Permit Compliance System (PCS) as a part of its TRA of existing effluent guidelines since the 2003 Annual Review (68 FRN 75515). Since 2002, EPA has been modernizing PCS by creating a new data system, ICIS-NPDES. ICIS-NPDES automates entering, updating, and retrieving NPDES data, and tracks permit issuance, permit limits, monitoring data, and other data pertaining to facilities regulated by the NPDES program under the CWA. In 2006, states began transitioning their DMR reporting from PCS to ICIS-NPDES. The transition was completed in 2012. By 2012, all states and U.S. territories/tribes have completely migrated to ICIS-NPDES, except New Jersey; thus, New

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<sup>7</sup> See documentation maintained within the [DMR Loading Tool](#), for a list of chemicals and their associated TWFs developed by EPA to date.

Jersey has not supplied EPA with required data about its CWA discharge program (U.S. EPA, 2015a). Therefore, the 2013 DMR data do not include data from New Jersey. See Section 2.1.4.2 for more information on this limitation.

More than 250,000 industrial facilities and 17,000 wastewater treatment plants have NPDES individual or general permits<sup>8</sup> for wastewater discharges to waters of the U.S. To provide an initial framework for setting permitting priorities, EPA developed a major/minor classification system for industrial and municipal wastewater discharges. Major discharges usually have the capability to impact receiving waters if not controlled and, therefore, have received more regulatory attention than minor discharges. Permitting authorities classify discharges as major by assessing the following six characteristics (U.S. EPA, 2010):

- Toxic pollutant potential
- Discharge flow: stream flow ratio
- Conventional pollutant loading
- Public health impact
- Water quality factors
- Proximity to coastal waters

Facilities that are major dischargers must report compliance with NPDES permit requirements via monthly DMRs submitted to the permitting authority. The permitting authority enters the reported DMR data into ICIS-NPDES, including pollutant concentrations and quantities, and identifies any permit violations. During the 2015 Annual Review, EPA identified approximately 6,000 facilities (including sewerage systems) classified as major dischargers with DMR data in 2013.

Minor dischargers may or may not adversely impact receiving water if not controlled. Facilities that are minor dischargers must report compliance with NPDES permit requirements via monthly DMRs submitted to the permitting authority; however, EPA does not require the permitting authority to enter data in the ICIS-NPDES database. For this reason, the ICIS-NPDES database includes discharge data only for a limited set of minor dischargers. During the 2015 Annual Review, EPA identified approximately 23,000 facilities (including sewerage systems) classified as minor dischargers with DMR data in 2013.

Parameters in ICIS-NPDES include water quality parameters (such as pH and temperature), specific chemicals, conventional parameters (such as biochemical oxygen demand and total suspended solids), and flow rates. Although other pollutants may be discharged, ICIS-NPDES contains data only for the parameters identified in the facility's NPDES permit. Facilities typically report monthly average concentrations or quantities per day discharged, but may report daily, quarterly, or yearly pollutant measurements, depending on monitoring requirements stated in their permit.

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<sup>8</sup> A NPDES individual permit is written to reflect site-specific conditions of a single discharger based on information submitted by that discharger in a permit application. An individual permit is unique to that discharger. NPDES general permits are written to cover multiple dischargers with similar operations and types of discharges based on the permit writer's professional knowledge of those types of activities and discharges (U.S. EPA, 2010).

#### **2.1.4.1 Utility of ICIS-NPDES Data**

The data collected in the ICIS-NPDES data system are particularly useful for the ELG planning process for the following reasons:

- ICIS-NPDES is national in scope, including data from 49 states and 21 U.S. territories/tribes.
- Discharge reports included in ICIS-NPDES are based on effluent chemical analysis and metered flows using known analytical methods.
- ICIS-NPDES includes discharge data for facilities in any SIC code.

#### **2.1.4.2 Limitations of ICIS-NPDES Data**

Limitations of the data collected in the ICIS-NPDES data system include the following:

- Because New Jersey has not supplied EPA with required discharge monitoring data about its CWA discharge program, the 2013 DMR data do not include discharge monitoring data from this state (U.S. EPA, 2015a). For reference, in 2011, New Jersey accounted for approximately 94,000 TWPE out of a total of 8,930,000 TWPE, with discharges primarily from the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) (40 CFR Part 414) and Petroleum Refining (40 CFR Part 419) point source categories.
- The data system contains data only for pollutants a facility is required by permit to monitor; the facility is not required to monitor or report all pollutants actually discharged.
- Data from minor discharges are not comprehensive.
- The data system does not include data characterizing discharges from industrial facilities to publicly owned treatment works (POTWs).
- In some cases, the data system does not identify the type of wastewater (e.g., process wastewater, stormwater, noncontact cooling water) being discharged; therefore, total flow rates reported may include stormwater and noncontact cooling water, as well as process wastewater.
- Pipe identification is not always clear. For some facilities, internal monitoring points are labeled as external outfalls, and ICIS-NPDES may double-count a facility's discharge. In other cases, an outfall may be labeled as an internal monitoring point, and ICIS-NPDES may not include all of a facility's discharge.
- Facilities may not always report the duration of discharge in their DMRs; pollutant loadings are calculated using continuous discharge assumptions (365 days per year), which may overestimate some toxic releases.

- Facilities are identified by SIC code, not point source category. For some SIC codes, it may be difficult or impossible to identify the correct point source category associated with the reported wastewater discharges.<sup>9</sup>
- ICIS-NPDES was designed as a permit compliance tracking system and does not contain production information that would benefit the review of discharges compared to production-based limitations.
- ICIS-NPDES data may be entered into the data systems manually, which leads to data entry errors.
- In ICIS-NPDES data may be reported as an average quantity, maximum quantity, average concentration, maximum concentration, and/or minimum concentration. For many facilities and pollutants, average quantity values are not provided. In these cases, EPA estimates facility loads based on the maximum quantity. Section 3.2.3 of the 2009 SLA Report discusses the maximum quantity issue in detail (U.S. EPA, 2009).

Despite these limitations, EPA determined that the ICIS-NPDES data summarized in the Loading Tool were usable for the 2015 TRA and prioritization of the toxic-weighted pollutant loadings discharged by industrial facilities. The ICIS-NPDES database remains the only data source quantifying regulated pollutants discharged directly to surface waters of the U.S.

### **2.1.5 Data from TRI**

Section 313 of the Emergency Planning and Community Right-to-Know Act requires facilities meeting specified thresholds to report their annual releases and other waste management activities for listed toxic chemicals to the TRI. Facilities must report the quantities of toxic chemicals recycled, collected, combusted for energy recovery, treated for destruction, or otherwise disposed of. Facilities must complete a separate report for each chemical manufactured, processed, or used in excess of the reporting threshold. For the 2015 TRA, EPA used TRI data for reporting year 2013 because they were the most recent data available when the review began.

A facility must meet three criteria to be required to submit a TRI report for a given reporting year:

1. *NAICS Code Determination.* The facility's primary six-digit NAICS code determines if TRI reporting is required. The primary NAICS code is associated with the facility's revenues, and may not relate to its pollutant discharges (71 FR 32464). The TRI-covered industries include six-digit NAICS codes under the following NAICS subsectors or industry groups (U.S. EPA, 2015b):
  - 212, Mining
  - 221, Utilities
  - 31–33, Manufacturing

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<sup>9</sup> ICIS-NPDES includes a data field for applicable ELGs; however, completion of this field is not required and it is typically not populated.

- All other miscellaneous manufacturing (includes 1119, 1131, 2111, 4883, 5417, 8114)
  - 424, Merchant Wholesalers, Non-durable Goods
  - 425, Wholesale Electronic Markets and Agent Brokers
  - 511, 512, 519, Publishing
  - 562, Hazardous waste
  - Federal facilities
2. *Number of Employees.* Facilities must have 10 or more full-time employees or their equivalent (i.e., a total of 20,000 hours or greater worked in a year). EPA defines a “full-time employee” as 2,000 hours per year of full-time equivalent employment (there are several exceptions and special circumstances that are well defined in the TRI reporting instructions) (40 CFR Part 372.3).
3. *Activity Thresholds.* If the facility is in a covered NAICS code and has 10 or more full-time employee equivalents, it must conduct an activity threshold analysis for every chemical and chemical category on the current TRI list. It must determine whether it manufactures, processes, or otherwise uses each chemical at or above the appropriate activity threshold. Reporting thresholds are not based on the amount of release. All TRI thresholds are based on mass, not concentration. Different thresholds apply for persistent, bioaccumulative, toxic (PBT) chemicals than for non-PBT chemicals. Generally, non-PBT chemical threshold quantities are 25,000 pounds for manufacturing and processing activities and 10,000 pounds for other use activities. All thresholds are determined per chemical over the calendar year. For example, mercury compounds are considered PBT chemicals. The TRI reporting guidance requires any facility that manufactures, processes, or otherwise uses 10 grams or more of mercury compounds to report it to TRI (U.S. EPA, 2000).

In TRI, facilities report annual loads released to the environment of each toxic chemical or chemical category that meets reporting requirements. Facilities must report onsite releases or disposal to air, receiving streams, land, underground wells, and several other categories. They must also report the amount of toxic chemicals in wastes transferred to offsite locations, (e.g., POTWs, commercial waste disposal facilities).

Facilities reporting to TRI are not required to sample and analyze waste streams to determine the quantities of toxic chemicals released. They may estimate releases based on mass balance calculations, published emission factors, site-specific emission factors, or other approaches. Facilities are required to indicate, by a reporting code, the basis of their release estimate. TRI's reporting guidance is that, for most chemicals reasonably expected to be present, but measured below the detection limit, facilities should use half the detection limit to estimate the mass released. However, TRI guidance indicates that for dioxins and dioxin-like compounds, non-detects should be treated as zero.

TRI allows facilities to report releases as specific numbers or as ranges, if appropriate. Specific estimates are encouraged if data are available to ensure their accuracy; however, TRI allows facilities to report releases in the following ranges: 1 to 10 pounds, 11 to 499 pounds, and

500 to 999 pounds. If a facility reports a range for a direct or indirect discharge, TRI uses the middle of the range for the TRI output (U.S. EPA, 2013a).

#### **2.1.5.1 Utility of TRI Data**

The data collected in TRI are particularly useful for ELG planning for the following reasons:

- TRI is national in scope, including data from all 50 states and U.S. territories/tribes.
- TRI includes releases to POTWs, not just direct discharges to surface water.
- TRI includes discharge data from manufacturing NAICS codes and some other industrial categories.
- TRI includes releases of many toxic chemicals, not just those in facility discharge permits.

#### **2.1.5.2 Limitations of TRI Data**

For purposes of ELG planning, limitations of the data collected in TRI include the following:

- Small establishments (fewer than 10 employees) are not required to report, nor are facilities that do not meet the reporting thresholds. Thus, facilities reporting to TRI may be a subset of an industry.
- Release reports are, in part, based on estimates, not measurements. Due to TRI guidance, they may overstate releases, especially at facilities with large wastewater flows.
- Certain chemicals (e.g., polycyclic aromatic compounds (PACs), dioxin and dioxin-like compounds) are reported as a class, not as individual compounds. Because the individual compounds in most classes vary widely in their toxic effects, the potential toxicity of chemical releases can be inaccurately estimated.
- Facilities are identified by NAICS code, not point source category. For some NAICS codes, it may be difficult or impossible to identify the point source category associated with the source of the toxic wastewater releases.
- TRI only requires facilities to report certain chemicals; therefore, all pollutants discharged from a facility may not be captured.

Despite these limitations, EPA determined that the TRI data presented in the Loading Tool were usable for the 2015 TRA and prioritization of the toxic-weighted pollutant loadings discharged by industrial categories.

## **2.2 Data Quality Review**

EPA evaluated the quality of the 2013 DMR and TRI data from the Loading Tool. This evaluation considered data completeness, comparability, accuracy, and reasonableness. The

*Environmental Engineering Support for Clean Water Regulations Programmatic Quality Assurance Project Plan (PQAPP)* describes the quality objectives in more detail (ERG, 2013).

### 2.2.1 Data Quality Review and Corrections to the 2013 DMR Data

To evaluate completeness, comparability, accuracy, and reasonableness of the 2013 DMR data, EPA performed the following checks:

*Completeness.* To evaluate the data’s completeness, EPA compared counts of facilities reporting 2011 and 2013 DMR data in the Loading Tool, as shown in Table 2-2.

As mentioned in Section 2.1.4.2, New Jersey has not converted to the current DMR reporting system (ICIS-NPDES), and thus has not supplied EPA with required data about its CWA discharge program for the reporting year 2013 (U.S. EPA, 2015a). As a result, the 2013 DMR data are not complete. However, because the numbers of major and minor facilities reporting DMR data are otherwise similar between 2011 and 2013, EPA determined that the 2013 DMR dataset contained in the Loading Tool was usable for the 2015 Annual Review.

**Table 2-2. Results of 2013 DMR Data Completeness Check**

Number of Major Industrial Dischargers		Number of Minor Industrial Dischargers	
DMR 2011	DMR 2013	DMR 2011	DMR 2013
1,908	1,938	14,530	16,420

Sources: *DMRLTOOutput2013\_v1* and *DMRLTOOutput2011\_v1*.

*Comparability.* EPA compared the 2011 and 2013 DMR data from the Loading Tool to identify pollutant discharges or wastewater flows that differed more than the year-to-year variation of other chemicals and facilities. EPA used this comparison to determine if quantity, concentration, or flow corrections were appropriate for facility discharges with the highest TWPE. If the comparison was unavailable (e.g., if the pollutant had not been previously reported), EPA contacted the facility or permitting authority.

*Accuracy and reasonableness.* To evaluate the accuracy and reasonableness of the 2013 DMR data, EPA reviewed the facility and pollutant discharges that had the greatest impact on total category loads and industrial rankings in the Loading Tool, based on toxic-weighted pounds discharged. For each identified facility, EPA used the following steps to review the accuracy and reasonableness of the loads calculated from ICIS-NPDES data:

1. Reviewed database corrections from previous TRAs to determine whether corrections made during previous reviews should apply to the 2013 DMR discharges.
2. Reviewed 2013 DMR facility SIC code information (including the facility’s NPDES permit and permit fact sheet) to determine if the facility was assigned to the point source category that best applied to the majority of its discharges, or identified pollutant-level point source category assignments where facilities have operations subject to more than one point source category.
3. Reviewed the Loading Tool’s 2013 DMR facility loading calculations, then compared Loading Tool data to data available in EPA’s online Envirofacts data system, or from the facility’s NPDES permit and permit fact sheet to verify the data. EPA then

calculated annual pollutant loads and compared the results to the 2013 Loading Tool output data to verify the accuracy of the calculated facility loads.

4. Reviewed ICIS-NPDES pipe descriptions available in EPA's online Envirofacts data system, ICIS-NPDES supporting tables, or the facility's NPDES permit and permit fact sheet to identify monitored pollutant discharges that are:
  - Intermittent (e.g., tidal, seasonal, or occurring after a storm).
  - Internal monitoring locations from which wastewater is combined with other waste streams and monitored again, resulting in double-counting loads.
  - Not representative of category discharges (e.g., stormwater runoff from nonprocess areas, noncontact cooling water, or wastewater related to operations in another point source category).
5. Reviewed ICIS-NPDES output data for pollutants that should be excluded from the 2013 DMR load calculation because they are in units that cannot be converted to quantities (e.g., kilograms per day (kg/d)) or concentrations (e.g., milligrams per liter (mg/L)).<sup>10</sup>
6. Contacted the state permitting authority or facility to determine if the data were reported and transcribed correctly.
7. Used the Error Report functionality built into the Enforcement and Compliance History Online (ECHO) website<sup>11</sup> to report identified DMR data errors to the data stewards for evaluation and correction, to ensure that the underlying DMR data pulled into ICIS-NPDES are updated.

Table 2-3 summarizes EPA's initial quality review of the 2013 DMR data. Table D-1 in Appendix D lists all of the specific corrections EPA made to the 2013 DMR data as a result of its data quality review, prior to generating the final 2015 point source category rankings. Note that EPA conducted further quality reviews of the 2013 DMR data, and made additional data corrections, as part of the more detailed preliminary category reviews (presented in Section 3) of this report.

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<sup>10</sup> Table A-5 in Appendix A in the *Technical Users Background Document for the Discharge Monitoring Report (DMR) Pollutant Loading Tool* lists pollutants excluded from the Loading Tool (U.S. EPA, 2012a). Examples include: temperature, pH, fecal coliform, and whole effluent toxicity.

<sup>11</sup> See EPA's [Enforcement Compliance History Online](#).



**Table 2-3. Summary of 2013 DMR Facility Data Quality Review**

<b>Facility</b>	<b>Location</b>	<b>Point Source Category</b>	<b>Pollutant(s) in Question</b>	<b>Review Findings</b>	<b>Action Taken/Database Correction</b>
Equity Group Eufaula Div LLC	Eufaula, AL	Meat and Poultry Products	Cadmium, Copper, Nickel, Zinc	Facility confirmed a concentration error for metals as part of the 2013 Annual Review; concentrations are three orders of magnitude larger than actual values (U.S. EPA, 2014a). December 2013 concentrations for cadmium, copper, nickel, and zinc are three orders of magnitude larger than other months.	Divide December 2013 cadmium, copper, nickel, and zinc concentrations by 1,000.
Nubay Mining, LLC	Galatia, IL	Coal Mining	Flow	EPA identified a unit error for 2011 flow values as part of the 2013 Annual Review. Flow values were three orders of magnitude larger than actual values (U.S. EPA, 2014a). March 2013 flow value for outfall 009 is also three orders of magnitude larger than other months.	Divide March 2013 flow value by 1,000.
PRASA WTP Sabana Grande	Sabana Grande, PR	Drinking Water Treatment	Flow	EPA corrected an outlier flow value for February 2011 for outfall 001 as part of the 2013 Annual Review by dividing by 10,000 to match other months (U.S. EPA, 2014a). December 2013 flow value for outfall 001 is two orders of magnitude higher than other months.	Divide December 2013 flow value by 100.
US Steel Mon Valley Works – Edgar Thomson Plant	Braddock, PA	Iron and Steel Manufacturing	Flow	EPA originally identified a flow correction as part of the 2007 Annual Review (U.S. EPA, 2007); EPA again incorporated the flow correction for the facility as part of the 2013 Annual Review (U.S. EPA, 2014a). The 2013 flow values reviewed for the 2015 Annual Review do not reflect the facility flow correction.	Incorporated facility flow correction and revised 2013 loads for all pollutants.
Celanese LTD Bay City Plant	Bay City, TX	Organic Chemicals, Plastics, and Synthetic Fibers	Total Residual Chlorine	Facility misidentified outfall 001 in DMR data; the outfall is an internal outfall. EPA marked this outfall as an internal outfall as part of the 2013 Annual Review (U.S. EPA, 2014a).	Marked outfall 001 as an internal outfall.

**Table 2-3. Summary of 2013 DMR Facility Data Quality Review**

<b>Facility</b>	<b>Location</b>	<b>Point Source Category</b>	<b>Pollutant(s) in Question</b>	<b>Review Findings</b>	<b>Action Taken/Database Correction</b>
Aventis Cropscience USA	Institute, WV	Organic Chemicals, Plastics, and Synthetic Fibers	PCBs	The facility confirmed 2011 PCBs concentrations were missing a below detection limit (BDL) indicator as part of the 2013 Annual Review (U.S. EPA, 2014a). EPA determined 2013 PCBs concentrations were also missing the BDL indicator.	Add BDL indicator to 2013 PCBs discharges.
Ed Arey & Sons, Inc.	Buckhannon, WV	Timber Products Processing	Flow	Facility reported incorrect units for the 2009 and 2011 flow values, making the flow values 1,000,000 times larger than previous years (U.S. EPA, 2014a). 2013 flow values are also 1,000,000 larger than previous years.	Divided 2013 flow values by 1,000,000 to match order of magnitude of previous years.
Evergreen Recycling and Disposal	Northwood, OH	Unassigned Waste Facility	Nickel	Facility reported incorrect units for the 2013 nickel concentrations.	Divided 2013 nickel concentrations by 1,000,000,000.
Koppers, Inc.	Gainesville, FL	Timber Products Processing	2,3,7,8-TCDD	State contact confirmed the 2013 DMR TCDD data for outfall 001 (Akhavain, 2014). EPA also confirmed the facility is a Superfund Site by the CERCLIS number.	Facility re-assigned to PSC code 999 – Superfund Sites.
Resolute FP US Inc. <sup>a</sup>	Calhoun, TN	Pulp, Paper and Paperboard	Mercury	Facility contact provided corrected 2013 mercury concentrations (Schwartz and Wiegand, 2014).	Revised 2013 mercury concentrations.
Black Oak Landfill	Hartville, MO	Landfills	Silver, Selenium	State contact confirmed that 2013 DMR silver and selenium concentrations are in units of µg/L, not mg/L (Sappington, 2014).	Divided 2013 silver and selenium concentrations by 1,000.
Graftech International Holdings Inc.	Anmoore, WV	Metal Finishing	Arsenic, Aluminum	Facility contact provided revised 2013 arsenic concentrations for outfall 026 and flow values for outfalls 026, 036, 037, and 038 (Williams, 2014).	Revised 2013 arsenic concentrations for outfall 026 and flow values for outfalls 026, 036, 037, and 038.
BASF Corp	Wyandotte, MI	Organic Chemicals, Plastics, and Synthetic Fibers	Mercury	The March 2013 mercury concentration is six orders of magnitude higher than the other reported concentrations for outfall 002.	Divide the March 2013 concentration by 1,000,000.

**Table 2-3. Summary of 2013 DMR Facility Data Quality Review**

<b>Facility</b>	<b>Location</b>	<b>Point Source Category</b>	<b>Pollutant(s) in Question</b>	<b>Review Findings</b>	<b>Action Taken/Database Correction</b>
Decker Coal Co.	Decker, MT	Coal Mining	Arsenic	State contact confirmed that the December 2013 arsenic concentration for outfall 002 is non-detect (Self, 2014).	Zeroed December 2013 arsenic concentration for outfall 002.
Aluminum Co. of America Badin	Badin, NC	NFMM	Cyanide	State contact confirmed that 2013 cyanide concentrations are in units of µg/L, not mg/L (Allocco, 2014).	Divided 2013 cyanide concentrations by 1,000.
Mosaic Phosphates Co. Faustina Plant	Donaldsonville, LA	Fertilizer Manufacturing	Fluoride, Cadmium, Aluminum	Facility is a phosphate fertilizer manufacturer, which is subject to 40 CFR Part 418, Subpart A, Phosphate Subcategory. However, because the facility is located in Louisiana, EPA determined it is exempt from Subpart A and permit limits are based on facility-specific permitting.	No data corrections. The facility does not represent the Fertilizer Manufacturing Category because it is exempt from 40 CFR Part 418.
Honeywell International Inc.	Hopewell, VA	Organic Chemicals, Plastics, and Synthetic Fibers	Hexachlorobenzene	Facility contact confirmed that 2013 hexachlorobenzene discharges are below detection (Parker, 2013).	Zeroed 2013 hexachlorobenzene discharges.
DuPont Washington Works	Washington, WV	Organic Chemicals, Plastics, and Synthetic Fibers	Hexachlorobenzene	Confirmed with DMR data provided by the West Virginia Department of Environmental Protection that the hexachlorobenzene discharges are below detection.	Zeroed 2013 hexachlorobenzene discharges.
Ergon West Virginia	Newell, WV	Petroleum Refining	Sulfide	Facility contact provided a revised July 2013 sulfide concentration (Stanton, 2015).	Revised July 2013 sulfide concentration.
Shenango Inc.	Pittsburgh, PA	Iron and Steel Manufacturing	Benzo(a)pyrene	August 2013 benzo(a)pyrene quantity is three orders of magnitude larger than other months and previous years data.	Divided August 2013 benzo(a)pyrene quantity by 1,000.
Feldspar Monticello Plant	Monticello, GA	Mineral Mining and Processing	Flow	November 2013 flow value is five orders of magnitude larger than other months.	Divided November 2013 flow by 100,000.
United Park City Mines Co.	Park City, UT	Ore Mining and Dressing	Mercury	State contact confirmed that 2013 mercury concentrations are in units of ng/L, not mg/L (Thiele, 2015).	Divided October 2013 mercury concentration by 1,000,000.

**Table 2-3. Summary of 2013 DMR Facility Data Quality Review**

<b>Facility</b>	<b>Location</b>	<b>Point Source Category</b>	<b>Pollutant(s) in Question</b>	<b>Review Findings</b>	<b>Action Taken/Database Correction</b>
Clearon Corp	South Charleston, WV	Inorganic Chemicals Manufacturing	Flow	March and May 2013 flow values are three orders of magnitude larger than other months in 2013 and previous years' data.	Divide March and May 2013 flow values by 1,000.
Clean Harbors Baton Rouge LLC	Baton Rouge, LA	Centralized Waste Treatment	Hexachlorocyclohexane	Confirmed hexachlorocyclohexane discharges are below detection with DMR data from Louisiana (LA DEQ, 2015).	Zeroed 2013 hexachlorocyclohexane discharges.
Henderson City Landfill	Henderson, KY	Landfills	No data corrections.	Facility contact confirmed the outlier cadmium concentration in March 2013 for outfall 001; the facility had a leachate tank flood on the sampling date for this outfall. Therefore, the sample was not a representative sample for the outfall (Anderson, 2015).	No data corrections.
US Ecology Texas Inc.	Robstown, TX	Centralized Waste Treatment	Flow	Facility contact confirmed the outlier flow value in September 2013 for outfall 004; the facility had a large rainfall event in September 2013 and the facility's flow meter was faulty. Therefore, the sample was not a representative sample for the outfall (Camarena, 2015).	

<sup>a</sup> This facility is referred to as Abibow US Inc. in previous annual review reports. In 2012, Abibow US Inc. became Resolute FP US Inc. (Resolute, 2012).

## 2.2.2 Data Quality Review and Corrections to the 2013 TRI Data

To evaluate completeness, comparability, accuracy, and reasonableness of the 2013 TRI data, EPA performed the following checks:

*Completeness.* To evaluate the data's completeness, EPA compared counts of facilities reporting 2011 and 2013 TRI data in the Loading Tool, as shown in Table 2-4. Because the number of facilities reporting is similar between 2011 and 2013, EPA determined that the 2013 TRI dataset contained in the Loading Tool was useable for the 2015 Annual Review.

**Table 2-4. Results of the 2013 TRI Data Completeness Check**

Total Number of Facilities Reporting to TRI		Number of Facilities Reporting Discharges Greater than Zero to TRI	
TRI 2011	TRI 2013	TRI 2011	TRI 2013
18,391	19,601	6,855	6,936

Sources: *TRILTOOutput2013\_v1* and *TRILTOOutput2011\_v1*.

*Comparability.* EPA compared the 2013 TRI data from the Loading Tool to 2011 TRI data from the Loading Tool to identify annual pollutant loadings that differed more than the year-to-year variation of other chemicals and facilities. EPA used this comparison to determine if corrections were appropriate for facility discharges with the highest TWPE. If the comparison was unavailable (e.g., the pollutant was not previously reported), EPA contacted the facility.

*Accuracy and reasonableness.* EPA reviewed facility and pollutant releases that had the greatest impact on total category loads and rankings in terms of TWPE released. For the identified facilities, EPA used the following steps:

1. Reviewed database corrections from previous TRAs to determine whether corrections made during previous reviews should apply to the 2013 TRI releases.
2. Reviewed releases reported to TRI for other reporting years (i.e., 2000, 2002, 2003, 2004, 2005, 2007, 2008, 2009, and 2011) and compared them to releases reported to TRI for reporting year 2013 to identify trends in the discharges.
3. Reviewed 2013 TRI NAICS code information to determine if the facility was assigned to the point source category that best applied to the majority of its discharges, or identified pollutant-level point source category assignments where facilities have operations subject to more than one point source category.
4. Reviewed 2013 DMR data, if available, and hand-calculated annual pollutant loads to compare to releases reported to TRI for reporting year 2013.
5. Verified that the Loading Tool excluded pollutants that should not have an associated pollutant load (e.g., yellow or white phosphorus). See Section 3.4.2 in EPA's *2011 Annual Effluent Guidelines Review Report* (U.S. EPA, 2012b).
6. Contacted the facility to verify whether the pollutant releases are reported correctly.

Through the accuracy review, EPA identified that hydrogen sulfide water releases accounted for approximately 40 percent of the total 2013 TRI TWPE (U.S. EPA, 2015c;

*TRILTOOutput2013\_v0*). EPA further evaluated the quality of the hydrogen sulfide data, as hydrogen sulfide is a relatively new pollutant reported to TRI that EPA has not previously considered in its annual reviews and because the data constitutes a large percentage of the TWPE reported to TRI in 2013. EPA evaluated data sources and contacted facilities, summarized in Table 2-5. EPA determined that the data for indirect releases are overestimated based on the estimation techniques used. As a result, EPA identified and adjusted the indirect releases of hydrogen sulfide reported to TRI to account for POTW removals (U.S. EPA, 2015c). See Section 2.2.2.1 for more details on EPA's investigation and adjustment of the 2013 hydrogen sulfide data reported to TRI.

Table 2-5 summarizes EPA's quality review of the 2013 TRI data. Table D-2 in Appendix D of this report lists all of the specific corrections EPA made to the 2013 TRI data as a result of its data quality review, prior to generating the final 2015 point source category rankings. Note that EPA conducted further quality review of the 2013 TRI data and identified additional data corrections as part of the more detailed preliminary category reviews presented in Section 3 of this report.

**Table 2-5. Summary of 2013 TRI Facility Data Quality Review**

<b>Facility</b>	<b>Location</b>	<b>Point Source Category</b>	<b>Chemical(s) in Questions</b>	<b>Review Findings</b>	<b>Action Taken/Database Correction</b>
International Paper	Georgetown, SC	Pulp, Paper, and Paperboard	Dioxin and dioxin-like compounds	Facility contact confirmed that the TCDD value reported to the 2013 TRI was not detected (Schwartz & Wiegand, 2014).	Zeroed dioxin and dioxin-like compound releases.
ExxonMobil Chemical Baton Rouge Chemical Plant	Baton Rouge, LA	Organic Chemicals, Plastics, and Synthetic Fibers	PACs	As part of the 2013 Annual Review, facility contact confirmed the 2011 TRI PAC releases were estimated from monthly sampling results that were non-detect; therefore, 2011 releases were zeroed (U.S. EPA, 2014a). 2013 releases are similar to 2011.	Zeroed 2013 PAC releases.
Mountain State Carbon	Follansbee, WV	Iron and Steel Manufacturing	PACs	Facility contact confirmed an error in their 2013 PAC release reported to TRI and provided corrected data (Smith, 2015).	Revised PAC release.
USS Gary Works	Gary, IN	Iron and Steel Manufacturing	Lead and lead compounds	Facility contact confirmed an error in their 2013 lead and lead compound release reported to TRI and provided corrected data (Armentrout, 2014).	Revised lead and lead compound release.
Valero Refining	Memphis, TN	Petroleum Refining	Hydrogen Sulfide	Facility contact confirmed the 2013 hydrogen sulfide release and stated that the release was calculated based on monthly sampling results (Brewer, 2014).	No data corrections.
Tesoro Refining	Salt Lake City, UT	Petroleum Refining	Hydrogen Sulfide	Facility contact confirmed that the 2013 hydrogen sulfide release was calculated based on sampling results (Ibarra, 2014).	No data corrections.
Smithfield Farmland Corp	Denison, IA	Meat and Poultry Products	Hydrogen Sulfide	Facility contact confirmed that the 2013 hydrogen sulfide release was calculated based on sampling results (Murphy, 2014).	No data corrections.
Smithfield Farmland Corp	Clinton, NC	Meat and Poultry Products	Hydrogen Sulfide	Facility contact confirmed that the 2013 hydrogen sulfide release was calculated based on sampling results (Murphy, 2014).	No data corrections.
Smithfield Farmland Corp	Smithfield, VA	Meat and Poultry Products	Hydrogen Sulfide	Facility contact confirmed that the 2013 hydrogen sulfide release was calculated based on sampling results (Murphy, 2014).	No data corrections.

**Table 2-5. Summary of 2013 TRI Facility Data Quality Review**

<b>Facility</b>	<b>Location</b>	<b>Point Source Category</b>	<b>Chemical(s) in Questions</b>	<b>Review Findings</b>	<b>Action Taken/Database Correction</b>
Tyson Fresh Meats Inc.	Logansport, IN	Meat and Poultry Products	Hydrogen Sulfide	Facility contact confirmed the 2013 hydrogen sulfide release and stated that the release was calculated based on sampling results (Dirks, 2015)	No data corrections.
JR Simplot Co	Grand Forks, ND	Canned and Preserved Fruits and Vegetable Processing	Hydrogen Sulfide	Facility contact confirmed the 2013 hydrogen sulfide release and stated that the release was calculated based on sampling results (Prigge, 2014).	No data corrections.
SAPPI Cloquet LLC	Cloquet, MN	Pulp, Paper, and Paperboard	Hydrogen Sulfide	Facility contact confirmed an error in 2013 hydrogen sulfide releases and provided corrected data (Schwartz & Wiegand, 2014).	Revised hydrogen sulfide release.
Rocktekn CP LLC	Hopewell, VA	Pulp, Paper, and Paperboard	Hydrogen Sulfide	Facility contact confirmed the 2013 hydrogen sulfide release and stated that the release was based on factors provided by the trade association (Schwartz & Wiegand, 2014).	No data corrections.



### 2.2.2.1 Updates to the 2013 TRI Hydrogen Sulfide Data

During its review of the 2013 TRI data, EPA noted that hydrogen sulfide water releases accounted for approximately 40 percent of the total 2013 TRI TWPE (U.S. EPA, 2015c; *TRILTOOutput2013\_v0*). Hydrogen sulfide has not historically been included or evaluated as part of EPA's previous annual reviews, but is now included due to recent changes in TRI reporting requirements.

Hydrogen sulfide was added to the TRI list of toxic chemicals in a final rule published on December 1, 1993. On August 22, 1994, EPA issued an Administrative Stay of the reporting requirements for hydrogen sulfide to evaluate issues brought to the Agency's attention after promulgation of the final rule. These issues concerned the human health effect basis for the listing and the Agency's use of exposure analyses in TRI listing decisions. Although the final rule listing hydrogen sulfide under section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) remained in force, the stay deferred the reporting requirements for hydrogen sulfide while EPA completed its further evaluation (76 FR 64022).

From its further evaluation of the environmental toxicity of hydrogen sulfide, EPA determined that available data indicate that water with concentrations of more than 2.0 ug/L undissociated hydrogen sulfide would constitute a long-term hazard to aquatic organisms despite its fate under certain environmental conditions (76 FR 64022). As a result, on October 17, 2011, EPA announced it was lifting the Administrative Stay of the reporting requirements for hydrogen sulfide under Section 313 of EPCRA (76 FR 64022). Facilities were required to report environmental releases of hydrogen sulfide to TRI beginning with the reporting year 2012, including releases to water.

EPA's review of the hydrogen sulfide data reported to TRI for the 2015 Annual Review identified five industrial point source categories where hydrogen sulfide contributed a substantial portion of the category TWPE. Table 2-6 lists these point source categories and the percentage of their total category TWPE attributed to hydrogen sulfide. Table 2-7 summarizes the reported 2013 TRI hydrogen sulfide releases by release type (i.e., direct and indirect releases) (U.S. EPA, 2015c).

**Table 2-6. Top 2013 TRI Point Source Categories with Reported Hydrogen Sulfide Water Releases**

Point Source Category	Total TWPE	H <sub>2</sub> S TWPE	Percentage of Total Category TWPE Attributed to H <sub>2</sub> S
430 – Pulp, Paper and Paperboard	4,280,000	2,140,000	50%
419 – Petroleum Refining	580,000	191,000	33%
406 – Grain Mills	276,000	274,000	99%
432 – Meat and Poultry Products	213,000	169,000	79%
407 – Canned and Preserved Fruits and Vegetables Processing	68,700	64,200	93%
<b>Total TRI TWPE for Top Categories with Reported Hydrogen Sulfide Releases</b>	<b>5,420,000</b>	<b>2,840,000</b>	<b>52%</b>
<b>Total TRI TWPE</b>	<b>7,160,000</b>	<b>2,870,000</b>	<b>40%</b>

Source: *TRILTOOutput2013\_v0*

**Table 2-7. Summary of 2013 TRI Hydrogen Sulfide Water Releases by Release Type**

Type of Release	Number of Facilities Reporting H <sub>2</sub> S Releases	Pounds of Reported H <sub>2</sub> S Releases	H <sub>2</sub> S TWPE
Direct	146	513,000	1,440,000
Indirect	26	511,000	1,430,000
<b>Total H<sub>2</sub>S Releases</b>	<b>172</b>	<b>1,024,000</b>	<b>2,870,000</b>
<b>Total TRI TWPE</b>			<b>7,160,000</b>

Source: *TRILTOOutput2013\_v0*

As shown in Table 2-6, hydrogen sulfide releases from five point source categories account for 99 percent of the hydrogen sulfide TRI TWPE and 40 percent of the total TRI TWPE. Table 2-7 shows that the total reported quantity of hydrogen sulfide released (in pounds) is equally distributed between direct and indirect releasing facilities. The data also indicate that a higher number of direct discharging facilities (146) reported releasing hydrogen sulfide as compared to indirect discharging facilities (26).

EPA further evaluated the quality of the hydrogen sulfide data, as hydrogen sulfide is a relatively new pollutant reported to TRI that EPA has not previously considered in its annual reviews, and because the data account for a large percentage of the TWPE reported to TRI in 2013. As a first step in assessing the quality of the hydrogen sulfide data and its utility for the 2015 Annual Review, EPA evaluated whether the reported releases for indirect discharging facilities take into account any treatment and removal that is likely to occur at the receiving POTW. As discussed in Section 3.4 of *Technical Users Background Document for the Discharge Monitoring Report (DMR) Pollutant Loading Tool* (U.S. EPA, 2012a), the Loading Tool adjusts, if possible, the TRI pollutant releases reported by indirect discharging facilities to account for pollutants removed at POTWs prior to release to receiving waters. Table C-1 in Appendix C of the *Technical Users Background Document for the DMR Pollutant Loading Tool* lists the POTW removals used for the TRI chemicals reported as transferred to POTWs (U.S. EPA, 2012a). The adjusted releases are incorporated into the TRI industrial rankings data presented in the “Top Industrial Dischargers of Toxic Pollutants” area of the Loading Tool.

EPA did not identify a removal specific to hydrogen sulfide in Table C-1 in Appendix C of the *Technical Users Background Document for the DMR Pollutant Loading Tool*; therefore, it determined that the 2013 TRI hydrogen sulfide data reported for indirect releasing facilities do not account for treatment occurring at POTWs.

Because hydrogen sulfide in water readily oxidizes to sulfates and is biologically oxidized to elemental sulfur under low to neutral pH and well-aerated conditions (U.S. EPA, 1986, WHO, 2003), hydrogen sulfide removal rates at POTWs are likely to be substantial, which would greatly reduce the amounts of hydrogen sulfide ultimately released to receiving waters. Therefore, EPA determined it was necessary to identify a removal efficiency that it could apply to the indirectly released hydrogen sulfide data reported in TRI, to account for hydrogen sulfide removed at POTWs.

EPA reviewed data sources historically used to develop POTW removals to establish a POTW removal rate for hydrogen sulfide. These data sources include:

- EPA's National Risk Management Research Laboratory (NRMRL) Treatability Database (U.S. EPA, 2004).
- POTW data incorporated into recent ELGs.
- POTW removals incorporated into EPA's Office of Pollution Prevention and Toxics (OPPT) Risk Screening Environmental Indicators (RSEI) model. (Note: EPA relies on the RSEI model for POTW removals only in the absence of actual performance data).

EPA has not made recent updates to the NRMRL Treatability Database, nor has EPA promulgated any more recent ELGs that regulate the release of hydrogen sulfide; therefore, these data sources did not provide any new information regarding POTW removals of hydrogen sulfide.

The RSEI model primarily relies on POTW removals obtained from the NRMRL Treatability Database, but also relies on Syracuse Research Corporation's (SRC's) Sewage Treatment Plant Fugacity Model (STPWIN) for those chemicals not in the NRMRL Treatability Database (U.S. EPA, 2013b). EPA did not identify any recent updates to the NRMRL Treatability Database; therefore, EPA focused its investigation on POTW removal rates for hydrogen sulfide that may be available in the STPWIN model.

EPA downloaded the latest version of SRC's STPWIN model (U.S. EPA, 2013b), which is integrated into EPA's Estimation Program Interface (EPI) Suite<sup>12</sup> (EPI Suite Version 4.11 (November 2012)). The EPI Suite is a suite of physical/chemical property and environmental fate estimation programs developed by the EPA's OPPT and SRC. The STPWIN model in particular predicts the removal of chemicals by typical activated sludge-based sewage treatment plants. The *Hydrogen Sulfide Releases Reported to the Toxics Release Inventory (TRI) in 2013* memorandum discusses the details of the STPWIN model (U.S. EPA, 2015c).

To estimate a hydrogen sulfide POTW removal, EPA entered the chemical properties for hydrogen sulfide into the STPWIN and used the default option for the degradation half-life of hydrogen sulfide, which provides a conservative removal rate. The resulting POTW removal for hydrogen sulfide calculated by the STPWIN model is 98.64 percent.

To gather additional data on POTW removals of hydrogen sulfide and confirm the POTW removal rate calculated by the STPWIN model, EPA contacted Lafayette Wastewater Treatment Plant, in Lafayette, IN, a POTW that receives wastewaters from industrial facilities reporting releases of hydrogen sulfide to TRI. EPA also contacted the City of Tolleson Wastewater Treatment Plant, in Tolleson, AZ, which reported hydrogen sulfide discharges on its DMR.

The Lafayette Wastewater Treatment Plant did not have any treatment data for hydrogen sulfide and was not concerned about hydrogen sulfide loads received from industrial facilities (Beeler, 2014). The City of Tolleson Wastewater Treatment Plant provided 2013 and 2014 hydrogen sulfide treatment data: raw influent hydrogen sulfide concentrations range from 0.23 – 0.742 mg/L, and the treated effluent concentrations are 0.01 mg/L or less (Tyler, 2014). These

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<sup>12</sup> See the [EPI Suite – Estimation Program Interface](#) for more information and to download the model.

data indicate a hydrogen sulfide percent removal at the POTW ranging from 95.7 to 98.7 percent. This suggests that EPA can reasonably apply the estimated removal rate of 98.64 percent obtained from the STPWIN model to adjust the indirect releases of hydrogen sulfide reported to TRI.

Thus, EPA applied a POTW removal rate of 98.64 percent to the hydrogen sulfide release data reported to TRI in 2013 and used the adjusted releases in the development of the final 2015 point source category rankings. Table B-1 in Appendix B lists the facilities with indirect hydrogen sulfide releases adjusted to account for POTW removals. Incorporating the POTW removal rate for the hydrogen sulfide releases reduces the total 2013 hydrogen sulfide TRI TWPE to 19,500.

EPA evaluated the data quality associated with direct releases of hydrogen sulfide reported to TRI in 2013 as part of its preliminary reviews, specifically for the Grain Mills, Meat and Poultry Products, and Pulp, Paper, and Paperboard point source categories (see Sections 3.3, 3.6, and 3.11 of this report, respectively).

### **2.3 Generation of the Final 2015 Point Source Category Rankings**

EPA incorporated the corrected data, discussed in Sections 2.2.1 and 2.2.2, into a set of databases, *DMRLTOutput2013\_v1* and *TRILTOutput2013\_v1*, designed to preserve the integrity of the data and subsequent analyses supporting the 2015 Annual Review. These databases are static, while the Loading Tool is based on a dynamic dataset that can change over time. (For example, evolving reporting requirements may affect the population of facilities reporting to ICIS-NPDES and facilities may report data corrections as they are identified). Tables E-1 and E-2 in Appendix E present the TRI and DMR point source category rankings by TWPE from the *TRILTOutput2013\_v1* and *DMRLTOutput2013\_v1* databases, respectively. Additionally, Tables E-3 and E-4 in Appendix E present the six-digit NAICS code rankings by TWPE from *TRILTOutput2013\_v1* and the four-digit SIC code rankings by TWPE from *DMRLTOutput2013\_v1*, respectively. Tables E-5 and E-6 in Appendix E present the chemical rankings by TWPE from *TRILTOutput2013\_v1* and *DMRLTOutput2013\_v1*, respectively.

To generate the final combined 2015 point source category rankings, EPA consolidated the 2013 DMR and TRI point source category rankings into one dataset using the following steps:

- EPA combined the two lists of point source categories by adding each category's *DMRLTOutput2013\_v1* TWPE and *TRILTOutput2013\_v1* TWPE.<sup>13</sup>
- EPA ranked the point source categories based on the total *DMRLTOutput2013\_v1* and *TRILTOutput2013\_v1* TWPE.

In addition, EPA eliminated from further consideration the results for the following:

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<sup>13</sup> Combining DMR and TRI loads may result in “double-counting” of chemical discharges if a facility reported to both ICIS-NPDES and TRI, and “single-counting” of chemicals reported in only one of the data sources. Further, the combined TWPE do not count chemicals that may be discharged but are not reported to ICIS-NPDES or TRI.

- Discharges from industrial categories for which EPA promulgated or revised ELGs within the past seven years. See Section 2.3.1 for details on these categories.
- Discharges from facilities that require a NPDES permit but do not fall into an existing or new point source category or subcategory (e.g., Superfund sites). See Section 2.3.2 for details on these facilities.

The final combined 2015 point source category rankings represent the results of the 2015 TRA and are presented in Section 2.4.

### **2.3.1 Categories for Which EPA Has Recently Promulgated or Revised ELGs**

In its 2015 TRA and subsequent preliminary category reviews, EPA did not consider industrial categories for which ELGs were recently established or revised but are not yet fully implemented. In general, EPA removes an industrial point source category from further consideration during a review cycle if EPA established or revised the category's ELGs within seven years of the annual reviews. This seven-year period allows time for the ELGs to be incorporated into NPDES permits. Table 2-8 lists the categories EPA excluded from the 2015 Annual Review due to this seven-year period.

**Table 2-8. Point Source Categories That Have Undergone Recent Rulemaking**

40 CFR Part	Point Source Category	Date of Rulemaking
450	Construction and Development	December 1, 2009 Revised March 6, 2014
449	Airport Deicing	May 16, 2012
423	Steam Electric Power Generating	September 30, 2015

In addition, EPA did not consider in its 2015 TRA and subsequent preliminary category reviews industrial categories or subcategories that are subjects of an ongoing rulemaking process. These include the Canned and Preserved Seafood Category (covering the Alaskan seafood processing subcategories), dental practices (specifically, relating to the discharge of mercury found in dental amalgam), and the Oil and Gas Extraction Category, specifically relating to the discharge of pollutants from unconventional oil and gas extraction facilities. See Section 5 of the Preliminary 2016 Plan (U.S. EPA, 2016) for details on the rulemaking status of these categories.

Industrial categories or subcategories for which EPA had recently considered developing or revising ELGs were not reviewed by EPA in its final 2015 point source category rankings and TRA. This is because EPA thoroughly reviewed these categories separately from the annual review process. This includes a subcategory of facilities that produce chlorine and chlorinated hydrocarbons (CCH) that fall into the Organic Chemicals, Pesticides, and Synthetic Fibers (40 CFR Part 414) and Inorganic Chemicals Manufacturing (40 CFR Part 415) point source categories. Similarly, EPA did not review coalbed methane extraction in the Oil and Gas Extraction Category (40 CFR Part 435). See Section 5 of EPA's *Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans* (U.S. EPA, 2014) for details on EPA's determinations related to these categories.

### **2.3.2 Discharges Not Categorizable**

EPA identified some discharges that are not categorizable into existing or new point source categories or subcategories. As part of the 2011 Annual Review, EPA reviewed high TWPE discharges from a Superfund site (Auchterlonie, 2009; U.S. EPA, 2012). Direct discharges from Superfund sites, whether made on site or off site, are subject to NPDES permitting requirements (U.S. EPA, 1988a, 1988b). For the reasons discussed below, EPA continued to determine that these discharges cannot be categorized into a single point source category, and excluded these TWPE from the final 2015 point source category rankings.

EPA determined that discharges from Superfund sites are too varied to be categorized into a single point source category. In particular, they vary by:

- Contaminants (e.g., metals, pesticides, dioxin).
- Treatment technologies (e.g., air stripping, granular activated carbon, chemical/ultraviolet oxidation, aerobic biological reactors, chemical precipitation).
- Types of facilities causing groundwater contamination (e.g., wood treatment facilities, metal finishing and electroplating facilities, drum recycling facilities, mines, mineral processing facilities, radium processing facilities).
- In addition, the duration and volume of Superfund site direct discharges vary significantly due to differences in aquifer characteristics and in the magnitude, fate, and transport of contaminants through aquifers and vadose zones.

Currently, permit writers for Superfund sites determine technology-based effluent limits using their best professional judgment. The permit must also call for more stringent effluent limitations, if necessary, to comply with state water quality standards. EPA finds that the current site-specific, best professional judgment approach is workable and flexible within the context of a Superfund cleanup (U.S. EPA, 2012).

## **2.4 Results of the 2015 Toxicity Rankings Analysis**

Table 2-9 presents the final 2015 combined point source category rankings that support EPA's 2015 TRA and Annual Review. The data in the table take into account all corrections and updates discussed in Sections 2.2.1 and 2.2.2. Table 2-9 also reflects the removal of any categories and discharges, as discussed in Section 2.3. As described in Section 3, EPA used these rankings to prioritize categories for further preliminary review.

Table 2-9. Final 2015 Combined Point Source Category Rankings

PSC Code	PSC Description	TRI TWPE	DMR TWPE	Total TWPE	Cumulative Percentage of Total TWPE	Rank
430	Pulp, Paper and Paperboard	2,190,000	321,000	2,510,000	30.1%	1
NA	Drinking Water Treatment	0	892,000	892,000	40.8%	2
415	Inorganic Chemicals Manufacturing <sup>a</sup>	794,000	94,200	888,000	51.4%	3
419	Petroleum Refining	419,000	242,000	661,000	59.4%	4
414	Organic Chemicals, Plastics and Synthetic Fibers <sup>a</sup>	333,000	301,000	634,000	67.0%	5
418	Fertilizer Manufacturing	8,500	568,000	577,000	73.9%	6
420	Iron and Steel Manufacturing	84,600	188,000	273,000	77.2%	7
421	Nonferrous Metals Manufacturing	34,300	187,000	221,000	79.8%	8
406	Grain Mills	179,000	22,300	201,000	82.2%	9
445	Landfills	235	166,000	166,000	84.2%	10
435	Oil and Gas Extraction	0	163,000	163,000	86.2%	11
436	Mineral Mining and Processing	4,710	139,000	144,000	87.9%	12
440	Ore Mining and Dressing	82,700	57,700	140,000	89.6%	13
433	Metal Finishing	46,900	73,500	120,000	91.0%	14
NA	Miscellaneous Foods and Beverages	5,030	105,000	110,000	92.3%	15
410	Textile Mills	2,210	89,500	91,700	93.4%	16
432	Meat and Poultry Products	81,500	8,220	89,700	94.5%	17
458	Carbon Black Manufacturing	63,800	0.0998	63,800	95.3%	18
437	Centralized Waste Treatment	2,720	59,700	62,400	96.0%	19
NA	Unassigned Waste Facility	13,000	34,000	47,000	96.6%	20
434	Coal Mining	386	40,200	40,600	97.1%	21
409	Sugar Processing	406	32,500	32,900	97.5%	22
422	Phosphate Manufacturing	2,340	23,900	26,200	97.8%	23
429	Timber Products Processing	22,500	2,980	25,500	98.1%	24
455	Pesticide Chemicals	19,000	3,760	22,700	98.4%	25
438	Metal Products and Machinery	17,400	2,010	19,400	98.6%	26
471	Nonferrous Metals Forming and Metal Powders	12,300	1,070	13,400	98.8%	27
424	Ferroalloy Manufacturing	12,100	283	12,400	98.9%	28
428	Rubber Manufacturing	7,410	4,120	11,500	99.0%	29
439	Pharmaceutical Manufacturing	2,670	6,500	9,170	99.2%	30
468	Copper Forming	5,840	2,440	8,280	99.3%	31
463	Plastics Molding and Forming	1,830	6,030	7,860	99.4%	32
464	Metal Molding and Casting (Foundries)	3,460	3,890	7,350	99.4%	33
444	Waste Combustors	88.8	7,210	7,300	99.5%	34

**Table 2-9. Final 2015 Combined Point Source Category Rankings**

<b>PSC Code</b>	<b>PSC Description</b>	<b>TRI TWPE</b>	<b>DMR TWPE</b>	<b>Total TWPE</b>	<b>Cumulative Percentage of Total TWPE</b>	<b>Rank</b>
407	Canned and Preserved Fruits and Vegetables Processing	5,340	660	6,000	99.6%	35
411	Cement Manufacturing	381	5,600	5,980	99.7%	36
405	Dairy Products Processing	4,270	481	4,750	99.7%	37
413	Electroplating	4,620	0	4,620	99.8%	38
469	Electrical and Electronic Components	3,030	171	3,200	99.8%	39
NA	Printing and Publishing	27.6	2,110	2,140	99.8%	40
425	Leather Tanning and Finishing	1,400	506	1,910	99.9%	41
451	Concentrated Aquatic Animal Production	0	1,530	1,530	99.9%	42
457	Explosives Manufacturing	1,130	386	1,520	99.9%	43
467	Aluminum Forming	857	657	1,510	99.9%	44
417	Soap and Detergent Manufacturing	1,260	148	1,410	99.9%	45
442	Transportation Equipment Cleaning	71.7	1,270	1,340	100.0%	46
461	Battery Manufacturing	934	227	1,160	100.0%	47
426	Glass Manufacturing	522	133	655	100.0%	48
NA	Independent and Stand Alone Labs	0	542	542	100.0%	49
460	Hospitals	0	536	536	100.0%	50
443	Paving and Roofing Materials (Tars and Asphalt)	190	93.6	283	100.0%	51
446	Paint Formulating	94.8	0.437	95.3	100.0%	52
454	Gum and Wood Chemicals Manufacturing	26.4	62.4	88.8	100.0%	53
465	Coil Coating	79.1	0.0925	79.2	100.0%	54
NA	Food Service Establishments	0	35.5	35.5	100.0%	55
447	Ink Formulating	19.6	0.0103	19.7	100.0%	56
466	Porcelain Enameling	7.82	0	7.82	100.0%	57
NA	Tobacco Products	5.32	0.167	5.48	100.0%	58
412	Concentrated Animal Feeding Operations	0	1.49	1.49	100.0%	59
427	Asbestos Manufacturing	0	0.589	0.589	100.0%	60
NA	Industrial Laundries	0	0	0	100.0%	61
<b>Total</b>		<b>4,480,000</b>	<b>3,860,000</b>	<b>8,340,000</b>		

Sources: *DMRLTOutput2013\_v1* and *TRILTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

NA: Not applicable.

<sup>a</sup> The Organic Chemicals, Pesticides, and Synthetic Fibers and Inorganic Chemicals Manufacturing point source categories do not include discharges from facilities that produce chlorine and chlorinated hydrocarbons because EPA recently reviewed this category separately from the annual review process.



## 2.5 **References for EPA's Toxicity Rankings Analysis**

1. Akhavein, Keisha. 2014. Telephone and Email Communication between Keisha Akhavein, Florida Department of Environmental Protection, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR TCDD Discharges for Koppers Inc. (November 7). EPA-HQ-OW-2015-0665. DCN 08213.
2. Allocco, Marcia. 2014. Telephone and Email Communication between Marcia Allocco, North Carolina Department of Environmental and Natural Resources and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Cyanide Discharges for ALCOA in Badin, NC. (November 14). EPA-HQ-OW-2015-0665. DCN 08214.
3. Anderson, Jason. 2015. Telephone and Email Communication between Jason Anderson, SMR Environmental Services, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Cadmium Discharges for Henderson City Landfill. (February 12). EPA-HQ-OW-2015-0665. DCN 08215.
4. Armentrout, Krista. 2014. Telephone and Email Communication between Krista Armentrout, US Steel, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 TRI Water Releases. (December 12). EPA-HQ-OW-2015-0665. DCN 08216.
5. Auchterlonie, Steve. 2009. Telephone Conversation between Steve Auchterlonie, Front St. Remedial Action, and Chris Krejci, Eastern Research Group, Inc., Re: Verification of magnitude and basis of estimate for dioxin and dioxin-like compounds discharges in PCS. (March 13). EPA-HQ-OW-2008-0517-0076.
6. Beeler, Brian. 2014. Telephone and Email Communication between Brian Beeler, Lafayette WWTP, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 Hydrogen Sulfide Discharges at POTWs. (December 19). EPA-HQ-OW-2015-0665. DCN 08217.
7. Brewer, Steve. 2014. Telephone and Email Communication between Steve Brewer, Valero Refining Co., and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 TRI Hydrogen Sulfide Discharges for Valero Refining in Memphis, TN. (December 22). EPA-HQ-OW-2015-0665. DCN 08218.
8. Camarena, Celina. 2015. Telephone and Email Communication between Celina Camarena, U.S. Ecology Texas Inc., and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Discharges for U.S. Ecology Texas Inc., Robstown, TX. (February 18). EPA-HQ-OW-2015-0665. DCN 08219.
9. Dirks, Kim. 2014. Telephone and Email Communication between Kim Dirks, Tyson Fresh Meats, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 TRI Hydrogen Sulfide Discharges for Tyson Fresh Meats in Hillsdale, IL. (December 22). EPA-HQ-OW-2015-0665. DCN 08220.

10. ERG. 2013. Eastern Research Group, Inc. Environmental Engineering Support for Clean Water Regulations Programmatic Quality Assurance Project Plan (PQAPP). Chantilly, VA. (May). EPA-HQ-OW-2010-0824-0229.
11. Ibarra, Sergio. 2014. Telephone and Email Communication between Sergio Ibarra, Tesoro Refining, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 TRI Hydrogen Sulfide Discharges for Tesoro Refining in Salt Lake City, UT. (December 22). EPA-HQ-OW-2015-0665. DCN 08221.
12. LA DEQ. 2015. Louisiana Department of Environmental Quality. Document Search. EPA-HQ-OW-2015-0665. DCN 08233.
13. Murphy, Susan. 2014. Telephone and Email Communication between Susan Murphy, Smithfield Farmland Corp., and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 TRI Hydrogen Sulfide Discharges for Smithfield Farmland Corp in Denison, IA. (December 22). EPA-HQ-OW-2015-0665. DCN 08222.
14. OMB. 1987. Office of Management and Budget. Standard Industrial Classification Manual. Washington, D.C. (Unknown). EPA-HQ-OW-2008-0517.
15. Parker, Andrew. 2013. Telephone and Email Communication between Andrew Parker, Honeywell International Inc., and Kimberly Bartell, Eastern Research Group, Inc., Re: 2011 DMR Discharges for Honeywell International. (December 13). EPA-HQ-OW-2014-0170-0031.
16. Prigge, John. 2014. Telephone and Email Communication between John Prigge, JR Simplot, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 TRI Hydrogen Sulfide Discharges for JR Simplot in Grand Forks, ND. (December 22). EPA-HQ-OW-2015-0665. DCN 08223.
17. Resolute FP. 2012. Resolute Forest Products. Legal Entity Name Changes. (May 23). EPA-HQ-OW-2015-0665. DCN 08200.
18. Sappington, Amanda. 2014. Telephone and Email Communication between Amanda Sappington, Missouri Department of Natural Resources, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Silver/Selenium Discharges for Black Oak Landfill. (November 14). EPA-HQ-OW-2015-0665. DCN 08224.
19. Schwartz, Jerry, and Paul Wiegand. 2014. Telephone and Email Communication between Jerry Schwartz, American Forest and Paper Association, Paul Wiegand, National Council for Air and Stream Improvement, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR and TRI Pulp and Paper Discharges. (December). EPA-HQ-OW-2015-0665. DCN 08201.
20. Self, Gina. 2014. Telephone and Email Communication between Gina Self, Montana Department of Environmental Quality, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Arsenic Discharges for Decker Coal Co. (November 14). EPA-HQ-OW-2015-0665. DCN 08225.

21. Smith, Patrick. 2014. Telephone and Email Communication between Patrick Smith, Mountain State Carbon, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 TRI PAC Discharges for Mountain State Carbon. (December 23). EPA-HQ-OW-2015-0665. DCN 08226.
22. Stanton, Neil. 2015. Telephone and Email Communication between Neil Stanton, Ergon West Virginia and Kimberly Bartell, Eastern Research Group, Inc. Re: 2013 DMR Sulfide Discharges. (February 27). EPA-HQ-OW-2015-0665. DCN 08227.
23. Thiele, Rhonda. 2015. Telephone and Email Communication between Rhonda Thiele, Utah Department of Environmental Quality and Kimberly Bartell, Eastern Research Group, Inc. Re: 2013 DMR Discharges for United Park City Mines Co., Park City, UT. (February 13). EPA-HQ-OW-2015-0665. DCN 08228.
24. Tyler, David. 2014. Telephone and Email Communication between David Tyler, Tolleson WWTP, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 Hydrogen Sulfide Discharges at POTWs. (December 19). EPA-HQ-OW-2015-0665. DCN 08229.
25. U.S. EPA. 1986. *Quality Criteria for Water*. Washington, D.C. (May). EPA-HQ-OW-2004-0032-2619.
26. U.S. EPA. 1988a. *CERCLA Compliance with Other Laws Manual: Interim Final*. OSWER Publication 9234.1-01. Washington, D.C. (August). Available online at: <http://nepis.epa.gov/Exe/ZyPDF.cgi/10001VMG.PDF?Dockey=10001VMG.PDF>. EPA-540-G-89-006.
27. U.S. EPA. 1988b. *Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites*. OSWER Directive 9283.1-2. (December). Available online at: <http://nepis.epa.gov/Exe/ZyPDF.cgi/2000A58O.PDF?Dockey=2000A58O.PDF>. EPA-540-G-88-003.
28. U.S. EPA. 2000. EPCRA Section 313 Guidance for Reporting Toxic Chemicals Within the Dioxins and Dioxin-Like Compounds Category. EPA-745-B-00-021. Washington, D.C. (December). EPA-HQ-OW-2003-0074-1150.
29. U.S. EPA. 2004. Office of Research and Development. *NRMRL Treatability Data Base, Version 5.0* (EPA 600/C-93/003a). Cincinnati, OH. (February). EPA-HQ-OW-2015-0665. DCN 08230.
30. U.S. EPA. 2007. *Technical Support Document for the Preliminary 2008 Effluent Guidelines Program Plan*. EPA-821-R-07-007. Washington, D.C. (October). EPA-HQ-OW-2006-0771-0819.
31. U.S. EPA. 2009. *Technical Support Document for the Annual Review of Existing Effluent Guidelines and Identification of Potential New Point Source Categories*. EPA-821-R-09-007. Washington, D.C. (October). EPA-HQ-OW-2008-0517-0515.

32. U.S. EPA. 2010. *U.S. EPA NPDES Permit Writers' Manual*. Washington, D.C. (September). EPA-833-K-10-001. EPA-HQ-OW-2010-0824-0236.
33. U.S. EPA. 2011. *Preliminary Study of Carbon Disulfide Discharges from Cellulose Products Manufacturers*. Washington, D.C. (December). EPA-821-R-11-009. EPA-HQ-OW-2015-0665. DCN 08182.
34. U.S. EPA. 2012a. *Technical Users Background Document for the Discharge Monitoring Report (DMR) Pollutant Loading Tool*. EPA-HQ-OW-2014-0170-0058.
35. U.S. EPA. 2012b. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December). EPA-821-R-12-001. EPA-HQ-OW-2010-0824-0195.
36. U.S. EPA. 2012c. *Toxic Weighting Factors Methodology*. Washington, D.C. (March). EPA-820-R-12-005. EPA-HQ-OW-2010-0824-0004.
37. U.S. EPA. 2013a. *Toxics Release Inventory Basic Plus Data File Format Documentation v12*. Washington, D.C. (July 11). EPA-HQ-OW-2014-0170-0063.
38. U.S. EPA. 2013b. *EPA's Risk-Screening Environmental Indicators (RSEI) Methodology*. Washington, D.C. (July). EPA-HQ-OW-2015-0665. DCN 08231.
39. U.S. EPA. 2014a. *The 2013 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-003. EPA-HQ-OW-2014-0170-0077.
40. U.S. EPA. 2014b. *Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans*. Washington, D.C. (September). EPA-820-R-14-001. EPA-HQ-OW-2014-0170-0002.
41. U.S. EPA. 2015a. *Known Data Problems*. Enforcement and Compliance History Online. Washington, D.C. (August). EPA-HQ-OW-2015-0665. DCN 08236.
42. U.S. EPA. 2015b. *Is My Facility's Six-Digit NAICS Code a TRI-Covered Industry?* Toxics Release Inventory Program. Washington, D.C. (February 3). EPA-HQ-OW-2015-0665. DCN 08237.
43. U.S. EPA. 2015c. Memorandum from William Swietlik, U.S. EPA, to Public Docket for the Preliminary 2016 Effluent Guidelines Program Plan, EPA Docket Number EPA-HQ-OW-2015-0665. Re: Hydrogen Sulfide Releases Reported to the Toxics Release Inventory (TRI) in 2013. (October 29). EPA-HQ-OW-2015-0665. DCN 08211.
44. U.S. EPA. 2016. *Preliminary 2016 Effluent Guidelines Program Plan*. Washington D.C. (June). EPA-821-R-16-001. EPA-HQ-OW-2015-0665. DCN 08208.
45. WHO, 2003. *World Health Organization. Hydrogen Sulfide in Drinking-water*. EPA-HQ-OW-2015-0665. DCN 08128.

46. Williams, Bill. 2014. Telephone and Email Communication between Bill Williams, Graftech International and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Arsenic Discharges. (December 17). EPA-HQ-OW-2015-0665. DCN 08232.

### **3. EPA's 2015 PRELIMINARY CATEGORY REVIEWS**

Based on its toxicity rankings analysis (TRA) described in Section 2, EPA was able to prioritize for further review those industrial categories whose pollutant discharges potentially pose the greatest hazards to human health or the environment because of their toxicity. To identify these industrial categories, EPA calculated each industrial category's percent of the total toxic-weighted pound equivalents (TWPE). As shown in Table 2-9, EPA identified and focused its preliminary category reviews on the 18 industrial categories that collectively discharge over 95 percent of the total TWPE.

EPA documented the quality of the data supporting its preliminary review of these industrial categories, analyzed how the data could be used to characterize the industrial wastewater discharges, and prioritized the findings for further review. See Appendix A of this report for more information on data usability and quality of the data sources supporting these reviews.

#### **3.1 Prioritization of Categories for Preliminary Category Review**

EPA excluded Petroleum Refining (40 CFR Part 419) and Metal Finishing (40 CFR Part 433) from further preliminary category review because it is currently conducting ongoing detailed and preliminary studies of these categories, respectively, as announced in the *Final 2014 Effluent Guidelines Program Plan* (U.S. EPA, 2015).

Based on its knowledge of the annual review process; data from the Integrated Compliance Information System for the National Pollutant Discharge Elimination System (ICIS-NPDES), and the Toxics Release Inventory (TRI); and historical data changes, EPA determined that five of the remaining 16 categories did not warrant a detailed preliminary category review as part of the 2015 Annual Review. For these five categories, many of which have been reviewed in detail in prior annual reviews, EPA found that one facility accounts for the majority of the category TWPE. From data available for the 2015 Annual Review, EPA determined that the discharges from that facility either are the result of an easily identifiable error or do not represent the category. These industrial categories, and the reasons for excluding them from further preliminary review, are briefly discussed in Sections 3.1.1 through 3.1.5, below.

For each of the remaining 11 categories (of the top 18 that collectively discharge over 95 percent of the total TWPE), EPA did not initially identify obvious data entry errors and/or determined that the TWPE was attributed to multiple pollutants and facilities. Therefore, EPA completed a preliminary review for these categories to determine whether the discharges warrant further review and study and/or possible revisions to the effluent limitations guidelines and standards. The findings from EPA's preliminary category reviews are discussed in the following subsections of this report. The 11 industrial categories identified for detailed preliminary category reviews are listed below and discussed in Sections 3.2 through 3.12:

- Carbon Black Manufacturing (40 CFR Part 458)
- Grain Mills (40 CFR Part 406)
- Iron and Steel Manufacturing (40 CFR Part 420)
- Landfills (40 CFR Part 445)

- Meat and Poultry Products (40 CFR Part 432)
- Mineral Mining and Processing (40 CFR Part 436)
- Nonferrous Metals Manufacturing (40 CFR Part 421)
- Ore Mining and Dressing (40 CFR Part 440)
- Organic Chemicals, Plastics, and Synthetic Fibers (40 CFR Part 414)
- Pulp, Paper, and Paperboard (40 CFR Part 430)
- Textile Mills (40 CFR Part 410)

### **3.1.1 Drinking Water Treatment (potential new category)**

The Drinking Water Treatment (DWT) Category total TWPE is composed entirely of 2013 discharge monitoring report (DMR) discharges. The 2013 DMR top pollutant is total residual chlorine. EPA identified one facility, Wyndham Sugar Bay Resort in St. Thomas, VI, which accounts for over 80 percent of the 2013 DMR total residual chlorine TWPE for the DWT Category. As part of the 2015 Annual Review, EPA Region 2 confirmed Wyndham Sugar Bay Resort's total residual chlorine discharges. The 2013 DMR total residual chlorine data is above the facility's permit limits. Additionally, the facility has submitted intermittent total residual chlorine DMR discharge data from 2010 through 2013. The EPA Region 2 contact stated that data from all facilities in the Virgin Islands is historically incomplete (Louis, 2015). EPA determined that the data do not support the need to review further the DWT Category.

### **3.1.2 Fertilizer Manufacturing (40 CFR Part 418)**

The Fertilizer Manufacturing Category total TWPE is composed almost entirely of DMR discharges, and the top 2013 DMR pollutant is fluoride. EPA identified one facility, Mosaic Fertilizer LLC, in Uncle Sam, LA, which accounts for 89 percent of the 2013 DMR fluoride TWPE for the Fertilizer Manufacturing Category. Mosaic Fertilizer LLC is a phosphate fertilizer manufacturer. Phosphate fertilizer manufacturers are subject to 40 CFR Part 418 Subpart A, "Phosphate Subcategory." The facility was reviewed as part of the 2010, 2011, and 2013 Annual Reviews. During those reviews, EPA determined that, in accordance with 40 CFR Part 418, the facility is exempt from Subpart A and that permit limits are based on facility-specific permitting (U.S. EPA 2011, 2012, 2014). Further, fluoride discharges for the facility have decreased from discharge years 2011 to 2013 (534,000 TWPE in 2011, 490,000 TWPE in 2013). Therefore, EPA makes a similar finding as previous annual reviews: Mosaic Fertilizer LLC does not represent the Fertilizer Category because it is exempt from 40 CFR Part 418 (see 52 FR 28428, July 29, 1987). EPA determined that the data do not support the need to review further the Fertilizer Manufacturing Category.

### **3.1.3 Inorganic Chemicals Manufacturing (40 CFR Part 415)**

For the Inorganic Chemicals Manufacturing (Inorganic Chemicals) Category, the 2013 TRI TWPE accounts for 89 percent of the combined DMR and TRI TWPE. As a result, EPA focused on 2013 TRI data. The top 2013 TRI pollutant is cadmium and cadmium compounds. EPA determined that one facility, PCS Nitrogen Fertilizer LP, in Geismar, LA, accounts for over 99 percent of the 2013 TRI cadmium and cadmium compounds TWPE for the Inorganic Chemicals Category. As part of the 2015 Annual Review, EPA contacted the facility. The facility contact confirmed the 2013 TRI cadmium and cadmium compound releases and stated

that the source of the metals in the wastewater was from the raw materials used in the phosphoric acid production processes, which contain low levels of naturally occurring metals. For one of three outfalls, the facility estimates cadmium and cadmium compound releases using monthly concentrations multiplied by the annual flow. This outfall comprises the majority of the TRI cadmium and cadmium compound releases reported to TRI and consists of inactive storage pile runoff and excess stormwater runoff. For the other two outfalls, the facility bases estimations on historical concentrations multiplied by the annual flow. All three of the outfalls used in determining the cadmium and cadmium compound releases to TRI are internal outfalls (Hopper, 2014). The facility has a NPDES permit, with cadmium monitoring only requirements for one of the internal outfalls only. Since the cadmium and cadmium compound releases from PCS Nitrogen Fertilizer are from internal outfalls, they are not accounted for in the facility's DMR loadings. The facility is in the process of obtaining a revised permit. EPA determined that the data do not represent the Inorganic Chemicals Category.

#### **3.1.4 *Miscellaneous Foods and Beverages (potential new category)***

The Miscellaneous Foods and Beverages Category total TWPE is composed almost entirely of DMR discharges and the top 2013 DMR pollutant is sulfide. EPA identified one facility, Bacardi Corporation, in Catano, PR, which accounts for over 97 percent of the 2013 DMR sulfide TWPE for the Miscellaneous Foods and Beverages Category. EPA previously reviewed sulfide discharges from Bacardi Corporation as part of the 2010 Annual Review. At that time, EPA determined that the facility's sulfide discharges were unique to the facility and certain pollutants, such as sulfide, are discharged below permit limits and combined with waste streams from adjacent wastewater treatment plants prior to reaching surface water (U.S. EPA, 2011). As part of the 2015 Annual Review, EPA Region 2 confirmed Bacardi Corporation's 2013 DMR sulfide discharges. The EPA Region 2 contact also stated that the facility's wastewater treatment and permit limits have not changed in recent years and the sulfide concentrations result from molasses used to make rum (Lantner, 2015). The 2013 DMR sulfide discharges meet the facility's permit limits. For these reasons, EPA determined that the sulfide discharges from Bacardi Corporation are unique to the facility and do not represent the Miscellaneous Foods and Beverages Category.

#### **3.1.5 *Oil and Gas Extraction (40 CFR Part 435)***

For the Oil and Gas Extraction (Oil and Gas) Category, the 2013 DMR TWPE accounts for 100 percent of the combined DMR and TRI TWPE. As a result, EPA focused on 2013 DMR data. The top 2013 DMR pollutant is sulfide, accounting for over 93 percent of the total DMR TWPE for the Oil and Gas Category. EPA determined that one facility, Maverick Spring, in Cody, WY, accounts for over 99 percent of the 2013 DMR sulfide TWPE. EPA determined that this facility is a conventional oil and gas extraction facility, and therefore, further reviewed the facility as part of the 2015 Annual Review.<sup>14</sup> The facility discharges sulfide from outfall 001; the facility's NPDES permit includes monitoring only requirements for sulfide from outfall 001. As part of the 2015 Annual Review, Region 8 confirmed Maverick Spring's 2013 DMR sulfide

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<sup>14</sup> EPA recently reviewed coal bed methane facilities separately from the annual review process. Additionally, EPA is currently engaged in a rulemaking process for unconventional oil and gas extraction facilities. Therefore, coal bed methane and unconventional oil and gas extraction facilities were not further reviewed in EPA's review of the Oil and Gas Extraction Category.



discharges and indicated that the facility's permit is currently under revision (Lozano, 2014). Additionally, Maverick Spring's sulfide discharges have increased from 2011 to 2013. EPA determined that the data do not support the need to further review the Oil and Gas Extraction Category.

### **3.1.6 References for the Prioritization of Categories for Preliminary Category Review**

1. Hopper, Cecil. 2014. Telephone and Email Communication between Cecil Hopper, PCS Nitrogen Fertilizer LP, and Eva Knoth, Eastern Research Group, Inc., Re: 2013 TRI Surface Water Releases. (December 12). EPA-HQ-OW-2015-0665. DCN 08238.
2. Lantner, Murray. 2015. Telephone and Email Communication between Murray Lantner, EPA Region 2, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Discharges for Bacardi Corp. (February 13). EPA-HQ-OW-2015-0665. DCN 08239.
3. Louis, Nestor. 2015. Telephone and Email Communication between Nestor Louis, EPA Region 2, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Discharges for Wyndham Sugar Bay Resort. (February 13). EPA-HQ-OW-2015-0665. DCN 08240.
4. Lozano, VelRey. 2014. Telephone and Email Communication between VelRey Lozano, EPA Region 8, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Sulfide Discharges for Maverick Spring in Cody WY. (December 18). EPA-HQ-OW-2015-0665. DCN 08241.
5. U.S. EPA. 2011. *Technical Support Document for the 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA 820-R-10-021. EPA-HQ-OW-2008-0517-0618.
6. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.
7. U.S. EPA. 2014. *The 2013 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA 821-R-14-003. EPA-HQ-OW-2014-0170-0077.
8. U.S. EPA. 2015. *Final 2014 Effluent Guidelines Program Plan*. Washington, D.C. (July). EPA-821-R-15-001. EPA-HQ-OW-2014-0170-0210.

## 3.2 Carbon Black Manufacturing (40 CFR Part 458)

EPA identified the Carbon Black Manufacturing (Carbon Black) Category for preliminary review because it ranks high, in terms of toxic-weighted pound equivalents (TWPE), in the final 2015 combined point source category rankings. EPA has not completed a preliminary category review of the Carbon Black Category as part of recent annual reviews because it has not historically been a category that collectively contributed to the top 95 percent of the total TWPE in the point source category rankings. However, EPA has reviewed and made data corrections for facility-specific discharges as part of previous toxicity rankings analyses (TRA). This section summarizes the results of the 2015 Annual Review. EPA focused its 2015 review on discharges of polycyclic aromatic compounds (PACs) because of their high TWPE relative to the other pollutants discharged by facilities in the Carbon Black Category.

### 3.2.1 Carbon Black Category 2015 Toxicity Rankings Analysis

Table 3-1 compares the TRA data for the Carbon Black Category from the 2011, 2013, and 2015 Annual Reviews. EPA did not conduct the TRA in 2012 or 2014, but instead reviewed additional data sources as part of the even-year annual review, as described in Section 2.2.1 of EPA's Preliminary 2016 Plan (U.S. EPA, 2016). As discussed in this section, during the 2015 Annual Review, EPA identified a data correction that affected the 2013 Toxic Release Inventory (TRI) data and TWPE. The bottom row of Table 3-1 shows the corrected data resulting from this review.

**Table 3-1. Carbon Black Category TRI and DMR Facility Counts and Discharges Reported in 2009, 2011, and 2013**

Year of Discharge	Year of Review	Carbon Black Category Facility Counts <sup>a</sup>			Carbon Black Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities	TRI TWPE <sup>b</sup>	DMR TWPE <sup>c</sup>	Total TWPE
2009	2011	5	0	3	62,300	65.9	62,400
2011	2013	4	0	1	27,900	0.2	27,900
2013	2015	3	0	1	63,800 <sup>d</sup>	0.1	63,800 <sup>d</sup>
					38,500 <sup>e</sup>		38,500 <sup>e</sup>

Sources: *DMRLoads2009\_v2* (for 2009 DMR); *TRIReleases2009\_v2* (for 2009 TRI); *DMRLTOutput2011\_v1* (for 2011 DMR); *TRILTOutput2011\_v1* (for 2011 TRI); *DMRLTOutput2013\_v1* (for 2013 DMR); *TRILTOutput2011\_v3* (for 2013 TRI).

Note: EPA did not evaluate 2010 or 2012 DMR and TRI data.

Note: TWPE values are rounded to three significant figures. Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Number of facilities with TWPE greater than zero.

<sup>b</sup> Releases include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.

<sup>c</sup> Includes DMR data from both major and minor dischargers.

<sup>d</sup> 2013 data prior to corrections made during the 2015 Annual Review.

<sup>e</sup> 2013 data after corrections were made during the 2015 Annual Review.

As shown in Table 3-1, the TWPE for TRI decreased from 2009 to 2011 and then increased from 2011 to 2013, even while the number of facilities reporting has dropped. The increase in TRI TWPE is primarily due to releases from facilities described in the sections below.

### 3.2.2 Carbon Black Category Pollutants of Concern

EPA’s 2015 review of the Carbon Black Category focused on 2013 TRI releases because the TRI data dominate the category’s combined TWPE. Table 3-2 shows the five pollutants with the highest contribution to the 2013 TRI TWPE. Table 3-2 also presents the 2013 TRI TWPE after EPA corrected errors identified in this preliminary category review (discussed in the sections below). As a point of comparison, Table 3-2 shows the 2011 TRI facility count and TWPE for these top five pollutants, based on the 2013 Annual Review (U.S. EPA, 2014).

PACs contribute more than 99 percent of the original 2013 TRI TWPE for the Carbon Black Category (prior to corrections discussed below). Section 3.2.3 presents EPA’s investigations of reported releases of this top pollutant. EPA did not investigate the other pollutants as part of the 2015 Annual Review because they represent a small percentage (approximately 0.01 percent) of the 2013 TRI TWPE for the Carbon Black Category.

**Table 3-2. Carbon Black Category Top TRI Pollutants**

Pollutant <sup>a</sup>	2013 TRI Data			2011 TRI Data	
	Number of Facilities Reporting Pollutant <sup>b</sup>	Original TWPE	Corrected TWPE	Number of Facilities Reporting Pollutant <sup>b</sup>	TWPE
PACs	3	63,800	38,500	3	27,900
Anthracene	1	4.57	4.57	1	2.79
Phenanthrene	1	0.522	0.522	1	0.319
Lead and Lead Compounds	2	0.259	0.259	3	0.517
Mercury and Mercury Compounds	1	0.012	0.012	1	0.012
<b>Carbon Black Category Total<sup>c</sup></b>	<b>3</b>	<b>63,800</b>	<b>38,500</b>	<b>4</b>	<b>27,900</b>

Sources: *TRILTOOutput2011\_v1* (for 2011 TRI TWPE); *TRILTOOutput2013\_v1* (for 2013 TRI TWPE)

Note: Sums of individual values may not equal the total presented, due to rounding.

NA: Not applicable.

<sup>a</sup> Anthracene, phenanthrene, lead and lead compounds, and mercury and mercury compounds combined contribute less than 0.01 percent of the original 2013 category TRI TWPE. Therefore, EPA did not review any of these releases as part of the 2015 Annual Review.

<sup>b</sup> Number of facilities with TWPE greater than zero.

<sup>c</sup> The Carbon Black Category has water releases for only five pollutants in the 2013 TRI.

### 3.2.3 Carbon Black PAC Discharges in TRI

EPA’s investigation of the PAC releases revealed that two facilities, GrafTech International Holdings, Inc. in Columbia, TN, and Cabot Corporation Canal Plant in Franklin,

LA<sup>15</sup>, account for 99 percent of the 2013 TRI PAC releases (shown in Table 3-3). Only three facilities have 2013 TRI PAC releases; the other is Cabot Corporation in Ville Platte, LA, which EPA did not investigate as part of the 2015 Annual Review because it contributes only 0.03 percent of the PAC TWPE in the Carbon Black Category.

**Table 3-3. Top Facilities Reporting 2013 TRI PAC Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
GrafTech International Holdings, Inc.	Columbia, TN	394	39,700	62.1%
Cabot Corporation Canal Plant	Franklin, LA	240	24,100	37.8%
Cabot Corporation Ville Platte Plant	Ville Platte, LA	0.16	16.1	0.03%
<b>Total</b>		<b>634</b>	<b>63,800</b>	<b>100%</b>

Source: *TRILTOOutput2013\_v1*

Note: Sums of individual values may not equal the total presented, due to rounding.

### ***GrafTech International Holdings, Inc.***

GrafTech International Holdings (GrafTech) in Columbia, TN, manufactures advanced graphite materials and refractory products. As part of its TRA data review and outlier correction process supporting the 2010, 2011, and 2013 Annual Reviews, EPA reviewed PAC releases from GrafTech. The corrections to the outlier data for this facility has historically dropped the category TWPE out of the top 95 percent (U.S. EPA, 2011, 2012, 2014). As discussed in the 2010 Annual Review Report, EPA contacted the facility to confirm PAC releases. The facility contact confirmed the PAC releases, provided sampling data, and explained that the facility estimates the release using the flow and the concentration of PACs in the total suspended solids (TSS) present in the wastewater (U.S. EPA, 2011).

In TRI, facilities report PAC releases as a class, not individual compounds. EPA estimates TWPE for PACs using the toxic weighting factor (TWF) for benzo(a)pyrene (100.66), the highest TWF associated with a PAC. Because the TWF for benzo(a)pyrene is higher than that for any other PAC, this represents a worst-case scenario. For PAC releases that are not composed completely of benzo(a)pyrene, this method overestimates the relative toxicity of the releases. Based on the monitoring data provided by the facility in 2010, EPA identified the specific PACs discharged and calculated a facility-specific TWF (Aslinger, 2010). As part of the TRA supporting the 2010, 2011, and 2013 Annual Reviews, EPA revised GrafTech's PAC releases to reflect their facility-specific TWF. Table 3-4 presents the original and corrected and TWPE used to support those annual reviews (U.S. EPA, 2011, 2012, 2014).

EPA contacted GrafTech as part of the 2015 Annual Review to confirm their 2013 discharges. The facility contact confirmed the 2013 PAC release and explained that the facility continues to estimate their PAC load by using the flow and process knowledge of the concentration of PACs in the TSS present in the wastewater. The facility contact also stated that

<sup>15</sup> Data sources list Cabot Corporation Canal Plant (TRI ID: 70583CBTCRSTATE, NPDES ID: LA000182) in either Franklin, LA or Centerville, LA. The cities are next to each other. The 2015 Annual Review Report lists the city as Franklin, LA because the company website lists the facility address at this location.

there was an increase in production from 2012 to 2013 (Philpot, 2015). Because the facility continues to calculate the PAC discharge using the same methods and monitoring data, EPA revised the 2013 releases to reflect the facility-specific TWF. Incorporating the facility-specific TWF decreases the 2013 PAC TWPE from 39,700 to 14,300.

**Table 3-4. GrafTech PAC TRI Releases for 2008 – 2013**

Year of Discharge	Original PAC Pounds Discharged	Original PAC TWPE	Corrected PAC TWPE
2008	1,090	110,000	8,950
2009	446	44,900	16,200
2011	371	37,300	13,500
2013	394	39,700	14,300

Source: U.S. EPA, 2011, U.S. EPA, 2012, U.S. EPA 2014, DMR Pollutant Loading Tool.

### ***Cabot Corporation Canal Plant***

Cabot Corporation Canal Plant (Cabot) in Franklin, LA, manufactures specialty chemicals and performance materials. As part of the 2015 Annual Review, EPA contacted the facility about its PAC releases. The facility contact explained that the facility estimates the PAC release based off the concentration of polycyclic aromatic hydrocarbons (PAHs) in the feedstock oil (removing anthracene and phenanthrene, which are not PACs) and the amount of wastewater used for the process. The facility adds in an estimate of solids based on process knowledge to reach a total amount of PACs discharged for the year (Longon, 2015). Although the facility uses process knowledge to determine the concentration of PACs in the feedstock oil, there is a potential for overestimation. Table 3-5 presents Cabot’s PAC discharge data for the years 2007 through 2013. As shown, the discharges have fluctuated since 2007, with spikes in 2010 and 2013. The facility contact stated that an increase in production led to the increased discharges.

**Table 3-5. Cabot PAC TRI Releases for 2007 – 2013**

Year of Discharge	Pounds of PACs Released	PAC TWPE
2007	178	17,900
2008	168	16,900
2009	149	14,900
2010	233	23,500
2011	142	14,300
2012	147	14,800
2013	240	24,100

Source: DMR Loading Tool

### **3.2.4 Carbon Black Category Findings**

The estimated toxicity of the Carbon Black Category discharges resulted primarily from PAC releases reported to TRI. From the 2015 Annual Review, EPA found:

- One facility, GrafTech International Holdings, Inc., in Columbia, TN, contributed 62 percent of the category’s 2013 TRI PAC releases. EPA contacted the facility as part of the 2015 Annual Review; the facility confirmed the releases and estimation

method. EPA revised the 2013 releases to reflect a facility-specific TWF to account for toxicity of specific the PACs discharged, which reduced the facility's TRI PAC TWPE from 39,700 to 14,300.

- One facility, Cabot Corporation Canal Plant, in Franklin, LA, contributed 38 percent of the category's 2013 TRI PAC releases. EPA contacted the facility as part of the 2015 Annual Review; the facility confirmed the release and explained that increases in production led to increased releases, however, the facility also indicated that the estimation methodology may overestimate PAC discharges.
- EPA identified that only two facilities accounted for 99 percent of the PAC TWPE for the Carbon Black Category. After applying a facility-specific TWF for GrafTech the 2013 Carbon Black Category TWPE decreased from 63,800 to 38,500. This change would drop the category outside the top 95 percent that EPA prioritized for preliminary review as part of the 2015 Annual Review.

### 3.2.5 Carbon Black Category References

1. Aslinger, Julia. 2010. Notes from E-mail Communication between Julia Aslinger, Center for Toxicology and Environmental Health, LLC, and Elizabeth Sabol, Eastern Research Group, Inc., Re: PAC Discharge Summary. (March 22). EPA-HQ-OW-2008-0517-0745.
2. ERG. 2015. Preliminary Category Review – Facility Data Review and Revised Calculations for Point Source Category – 458 – Carbon Black Manufacturing. (September). EPA-HQ-OW-2015-0665. DCN 08122.
3. Longon, Scott. 2015. Telephone Communication between Scott Longon, Cabot Corporation Canal Plant, and Kara Edquist, Eastern Research Group, Inc., Re: 2013 TRI PAC Discharges for Cabot Corporation's Canal Plant, Franklin, LA. (April 14). EPA-HQ-OW-2015-0665. DCN 08123.
4. Philpot, Beverley. 2015. Telephone Communication between Beverley Philpot, Graftech International Holdings, Inc., and Kara Edquist, Eastern Research Group, Inc., Re: 2013 TRI PAC Discharges for Graftech International Holdings, Inc., Columbia, TN. (April 14). EPA-HQ-OW-2015-0665. DCN 08124.
5. U.S. EPA. 2011. *Technical Support Document for the 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-820-R-10-021. EPA-HQ-OW-2008-0517-0618.
6. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.
7. U.S. EPA. 2014. *The 2013 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-003. EPA-HQ-OW-2014-0170-0077.

8. U.S. EPA. 2016. *Preliminary 2016 Effluent Guidelines Program Plan*. Washington, D.C. (June). EPA-821-R-16-001. EPA-HQ-OW-2015-0665. DCN 08208.

### 3.3 Grain Mills (40 CFR Part 406)

EPA identified the Grain Mills Category for preliminary review because it ranks high, in terms of toxic-weighted pound equivalents (TWPE), in the final 2015 combined point source category rankings. EPA has not completed a preliminary category review of the Grain Mills Category as part of recent annual reviews because it has not historically been a category that collectively contributed to the top 95 percent of the total TWPE in the point source category rankings. This section summarizes the results of the 2015 Annual Review. Hydrogen sulfide was added as a Toxic Release Inventory (TRI) reporting requirement in 2012. As a result, in 2013, hydrogen sulfide contributed a substantial amount of TWPE for the category. Therefore, for the 2015 Annual Review, EPA focused its review on discharges of hydrogen sulfide because of the high TWPE relative to the other pollutants discharged by facilities in the Grain Mills Category.

#### 3.3.1 Grain Mills Category 2015 Toxicity Rankings Analysis

Table 3-6 compares the toxicity rankings analyses (TRA) data for the Grain Mills Category from the 2011, 2013, and 2015 Annual Reviews. EPA did not conduct the TRA in 2012 or 2014, but instead reviewed additional data sources as part of the even-year annual review, as described in Section 2.2.1 of EPA’s Preliminary 2016 Plan (U.S. EPA, 2016). During the 2015 Annual Review, EPA did not identify any data corrections to the 2013 Discharge Monitoring Report (DMR) and TRI discharge data for the Grain Mills Category.

**Table 3-6. Grain Mills Category TRI and DMR Facility Counts and Discharges Reported in 2009, 2011, and 2013**

Year of Discharge	Year of Review	Grain Mills Category Facility Counts <sup>a</sup>			Grain Mills Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities	TRI TWPE <sup>b</sup>	DMR TWPE <sup>c</sup>	Total TWPE
2009	2011	32	10	13	6,190	2,900	9,090
2011	2013	23	7	18	10,500	2,810	13,300
2013	2015	31	5	15	179,000	22,300	201,000

Sources: *TRIRelases2009\_v2*; *DMRLoads2009\_v2* (for 2009 TRI and DMR); *TRILTOOutput2011\_v1*; *DMRLTOOutput2011\_v1* (for 2011 TRI and DMR); *TRILTOOutput2013\_v1*; *DMRLTOOutput2013\_v1* (for 2013 TRI and DMR).

Note: EPA did not evaluate 2010 or 2012 DMR and TRI data.

Note: TWPE values are rounded to three significant figures. Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Number of facilities with TWPE greater than zero.

<sup>b</sup> Releases include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals. The 2013 TRI TWPE also includes TWPE associated with reported releases of hydrogen sulfide. Facilities began reporting releases of hydrogen sulfide to TRI in 2012.

<sup>c</sup> Includes DMR discharges from both major and minor dischargers.

As shown in Table 3-6, the total TWPE increased slightly from 2009 to 2011 and substantially from 2011 to 2013. This substantial increase was driven by releases of hydrogen sulfide reported to TRI, discussed in the sections below. The number of facilities reporting to



TRI decreased from 2009 to 2011, but rose again in 2013. The total number of DMR facilities, both major and minor, declined slightly from 2009 to 2013.

### 3.3.2 Grain Mills Category Pollutants of Concern

EPA’s 2015 review of the Grain Mills Category focused on the 2013 TRI releases because the TRI data dominate the category’s combined TWPE. EPA did not focus on 2013 DMR discharges, however, the increase in DMR TWPE from 2011 to 2013 is attributed to an outlier flow during August 2013 from one facility, which was subsequently corrected in the source data after EPA finalized the 2015 combined point source category rankings. Table 3-7 shows the five pollutants with the highest contribution to the 2013 TRI TWPE. As a point of comparison, Table 3-7 also shows the 2011 TRI facility count and TWPE for these top pollutants, based on the 2013 Annual Review (U.S. EPA, 2014). Hydrogen sulfide contributes over 98 percent of the total 2013 TRI TWPE. Because hydrogen sulfide was added as a TRI reporting requirement in 2012, no hydrogen sulfide releases were reported in 2011. EPA’s investigations of reported releases of hydrogen sulfide are presented in Sections 3.3.3 and 3.3.4. EPA did not investigate the other pollutants as part of the 2015 Annual Review, because they represent a small percentage (less than 2 percent) of the 2013 TRI TWPE for the Grain Mills Category.

**Table 3-7. Grain Mills Category Top TRI Pollutants**

Pollutant <sup>a</sup>	2013 TRI Data		2011 TRI Data	
	Number of Facilities Reporting Pollutant <sup>b</sup>	TWPE	Number of Facilities Reporting Pollutant <sup>b</sup>	TWPE
Hydrogen Sulfide	7	177,000	NA <sup>c</sup>	NA <sup>c</sup>
Nitrate Compounds	13	1,100	11	1,640
Ammonia	8	416	8	391
Ethylene Glycol	3	141	2	331
Lead and Lead Compounds	3	141	4	473
<b>Top Pollutant Total</b>	<b>NA</b>	<b>179,000</b>	<b>NA</b>	<b>2,840</b>
<b>Grain Mills Category Total</b>	<b>31</b>	<b>179,000</b>	<b>23</b>	<b>10,500</b>

Sources: *TRILTOOutput2011\_v1*; *TRILTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

NA: Not applicable.

<sup>a</sup> Nitrate compounds, ammonia, ethylene glycol, and lead and lead compounds releases combined contribute less than 2 percent of the 2013 category TRI TWPE. Therefore, EPA did not review any of these releases as part of the 2015 Annual Review.

<sup>b</sup> Number of facilities with TWPE greater than zero.

<sup>c</sup> Hydrogen sulfide was added as a TRI reporting requirement in 2012 it was not a TRI-listed chemical in 2011.

### 3.3.3 Hydrogen Sulfide Background

As described in Section 2.2.2.1 of this report, facilities were required to report releases of hydrogen sulfide to TRI beginning in 2012. EPA did not perform a TRA in 2014; therefore, EPA is reviewing TRI reported hydrogen sulfide water releases for the first time as part of the 2015 Annual Review. Hydrogen sulfide is a biologically active compound that is found primarily as an

anaerobic degradation product of both organic sulfur compounds and inorganic sulfates. Sulfides are constituents of many industrial wastes such as those from farming, food processors, tanneries, paper mills, chemical plants, and gas works. The anaerobic decomposition of sewage, sludge beds, algae, and other naturally deposited organic material is a major source of hydrogen sulfide (U.S. EPA, 1986). Discharges from these and other activities can release hydrogen sulfide to receiving waters (ATSDR, 2014).

Hydrogen sulfide is a soluble, colorless, highly poisonous, gaseous compound having the characteristic odor of rotten eggs. When soluble sulfides are added to water, they react with hydrogen ions to form the hydrosulfide ion ( $\text{HS}^-$ ) and hydrogen sulfide ( $\text{H}_2\text{S}$ ), the proportion of each depending on pH. The toxicity of sulfides derives primarily from hydrogen sulfide rather than from the hydrosulfide or sulfide ions. At pH 9, approximately 99 percent of the sulfide is in the form of  $\text{HS}^-$ ; at pH 7 the sulfide is equally divided between  $\text{HS}^-$  and  $\text{H}_2\text{S}$ ; and at pH 5 about 99 percent of the sulfide is present in the form of  $\text{H}_2\text{S}$  (U.S. EPA, 1986). In well aerated water, hydrogen sulfide is readily oxidized to sulfates and biologically oxidized to elemental sulfur. Under anaerobic conditions, microbial reduction of sulfate to sulfide can occur (WHO, 2003).

### 3.3.4 Grain Mills Category Hydrogen Sulfide Releases in TRI

EPA's investigation of the hydrogen sulfide data revealed that one facility, Cargill, Inc., Wet Corn Milling in Wahpeton, ND, accounts for over 98 percent of the hydrogen sulfide releases reported to TRI in 2013 (shown in Table 3-8). EPA did not investigate the remaining facilities reporting releases of hydrogen sulfide as part of the 2015 Annual Review.

**Table 3-8. Top Facilities Reporting 2013 TRI Hydrogen Sulfide Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
Cargill, Inc., Wet Corn Milling	Wahpeton, ND	62,500	175,000	98.8%
All other hydrogen sulfide releases in the Grain Mills Category <sup>a</sup>		776	2,170	1.2%
<b>Total</b>		<b>63,200</b>	<b>177,000</b>	<b>100%</b>

Source: *TRILTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Six additional facilities reported hydrogen sulfide releases in the 2013 TRI.

Cargill, Inc., Wet Corn Milling in Wahpeton, ND, manufactures high fructose corn syrup. EPA contacted the facility as part of the 2015 Annual Review. The facility operates a wastewater treatment plant on site, which includes aerobic and anaerobic treatment steps, and discharges effluent from the wastewater treatment plant directly to the Red River. The hydrogen sulfide releases are produced by the anaerobic wastewater treatment at the facility, not directly by the manufacturing process (Razink, 2014). Sulfur compounds are not regulated pollutants in the Grain Mills effluent limitations guidelines and standards (ELGs) (40 CFR Part 406).

To estimate their 2013 TRI hydrogen sulfide release, the facility, over two weeks, took four direct samples of wastewater from their treatment plant's external outfall and measured the dissolved sulfide concentration in the samples. According to the facility, measurement of

dissolved sulfide concentration in water may be a high bias estimate of hydrogen sulfide concentration. The average concentration from these four samples was multiplied by the average daily flow to estimate the pounds discharged per day, and then multiplied by the number of days wastewater was discharged in 2013 to estimate the annual pounds discharged (Razink, 2014). The facility reported similar direct releases of hydrogen sulfide to TRI in 2012 (184,000 TWPE) and 2013 (DMR Pollutant Loading Tool).

### **3.3.5 Grain Mills Category Findings**

The estimated toxicity of the Grain Mills Category discharges resulted primarily from hydrogen sulfide releases reported to TRI. From the 2015 Annual Review, EPA found:

- One facility, Cargill, Inc., Wet Corn Milling in Wahpeton, ND, contributes over 98 percent of the category's 2013 TRI hydrogen sulfide releases. The facility has a NPDES permit for its wastewater treatment plant and is a direct discharger.
  - The reported direct release to TRI was estimated based on the average dissolved sulfide concentration from four samples taken over two weeks, and may reflect high bias releases of hydrogen sulfide from the facility.
  - The release may be attributed to anaerobic wastewater treatment at the facility, and not to the manufacturing process.
- Because the majority of the hydrogen sulfide releases are attributed to one facility, EPA does not consider them to be representative of the Grain Mills Category.

### **3.3.6 Grain Mills Category References**

1. ATSDR. 2014. U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry. *Draft Toxicological Profile for Hydrogen Sulfide and Carbonyl Sulfide*. Atlanta, GA. (October). EPA-HQ-OW-2015-0665. DCN 08125.
2. ERG. 2015. Eastern Research Group, Inc. Preliminary Category Review – Facility Data Review for Point Source Category – 406 – Grain Mills. Chantilly, VA. (September). EPA-HQ-OW-2015-0665. DCN 08126.
3. Razink, Jonathan. 2014. Telephone and Email Communication Between Jonathan Razink, Cargill, Inc., and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 TRI Hydrogen Sulfide Releases. (December 22). EPA-HQ-OW-2015-0665. DCN 08127.
4. U.S. EPA. 1986. *Quality Criteria for Water*. Washington, D.C. (May). EPA-HQ-OW-2004-0032-2619.
5. U.S. EPA. 2014. *The 2013 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-003. EPA-HQ-OW-2014-0170-0077.

6. U.S. EPA. 2016. *Preliminary 2016 Effluent Guidelines Program Plan*. Washington, D.C. (June). EPA-821-R-16-001. EPA-HQ-OW-2015-0665. DCN 08208.
7. WHO. 2003. World Health Organization. *Hydrogen Sulfide in Drinking-water*. EPA-HQ-OW-2015-0665. DCN 08128.

### **3.4     Iron and Steel Manufacturing (40 CFR Part 420)**

EPA identified the Iron and Steel Manufacturing Category for preliminary review because it ranks high again, in terms of toxic-weighted pound equivalents (TWPE), in the final 2015 combined point source category rankings. Previously, EPA reviewed discharges from this category as part of the 2011 and 2013 Annual Reviews in which it also ranked high (U.S. EPA, 2012; U.S. EPA, 2014). This section summarizes the results of the 2015 Annual Review. EPA focused its 2015 review on discharges of polychlorinated biphenyls (PCBs), cyanide, fluoride, nitrate compounds, and lead and lead compounds due to their high TWPE relative to the other pollutants discharged by facilities in the Iron and Steel Manufacturing Category. Cyanide and fluoride, reviewed as part of the 2013 Annual Review, continue to be top pollutants of concern. For the 2015 Annual Review, available discharge data also showed significant contributions of PCBs, nitrate compounds, and lead and lead compounds. For further background on the Iron and Steel Manufacturing Category, including an industry profile, see *The 2011 Annual Effluent Guidelines Review Report* (U.S. EPA, 2012).

#### **3.4.1     *Iron and Steel Manufacturing Category 2015 Toxicity Rankings Analysis***

Table 3-9 compares the toxicity rankings analyses (TRA) data for the Iron and Steel Manufacturing Category from the 2011, 2013, and 2015 Annual Reviews. EPA did not conduct the TRA in 2012 or 2014, but instead reviewed additional data sources as part of the even-year annual review, as described in Section 2.2.1 of EPA’s Preliminary 2016 Plan (U.S. EPA, 2016). As discussed in this section, during the 2015 Annual Review, EPA identified data corrections that affected the 2013 Discharge Monitoring Report (DMR) and Toxic Release Inventory (TRI) data and TWPE. The bottom row of Table 3-9 shows the corrected data resulting from this review.

**Table 3-9. Iron and Steel Manufacturing Category TRI and DMR Facility Counts and Discharges Reported in 2009, 2011, and 2013**

Year of Discharge	Year of Review	Iron and Steel Manufacturing Category Facility Counts <sup>a</sup>			Iron and Steel Manufacturing Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities	TRI TWPE <sup>b</sup>	DMR TWPE <sup>c</sup>	Total TWPE
2009	2011	227	73	49	96,200	108,000 <sup>d</sup>	205,000 <sup>d</sup>
2011	2013	222	76	45	82,900	214,000 <sup>e</sup>	297,000 <sup>e</sup>
2013	2015	215	51	29	84,600 <sup>f</sup>	188,000 <sup>f</sup>	273,000 <sup>f</sup>
					82,600 <sup>g</sup>	182,000 <sup>g</sup>	264,000 <sup>g</sup>

Sources: 2013 Annual Review Report (for 2009 and 2011 DMR and TRI Data) (U.S. EPA, 2014); *DMRLTOutput2013\_v1* (for 2013 DMR); *TRILTOutput2013\_v1* (for 2013 TRI).

Note: EPA did not evaluate 2010 or 2012 DMR and TRI data.

Note: TWPE values are rounded to three significant figures. Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Number of facilities with TWPE greater than zero.

<sup>b</sup> Releases include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.

<sup>c</sup> Includes DMR data from both major and minor dischargers.

<sup>d</sup> 2009 data after corrections were made during the 2011 Annual Review.

<sup>e</sup> 2011 data after corrections were made during the 2013 Annual Review.

<sup>f</sup> 2013 data prior to corrections made during the 2015 Annual Review.

<sup>g</sup> 2013 data after corrections were made during the 2015 Annual Review.

As shown in Table 3-9, the number of TRI facilities with pollutant releases and TRI TWPE decreased from 2009 to 2013. The number of permitted facilities with DMR data also decreased from 2009 to 2013. This suggests that the number of U.S. iron and steel facilities may be declining. However, during the same timeframe, the DMR TWPE increased substantially from 2009 to 2011, then decreased from 2011 to 2013.

### 3.4.2 Iron and Steel Manufacturing Category Pollutants of Concern

EPA’s 2015 review of the Iron and Steel Manufacturing Category focused on the 2013 DMR and TRI discharges because both contribute to the category’s combined TWPE. Table 3-10 shows the five pollutants with the highest contribution to the 2013 DMR TWPE. Table 3-10 also presents the 2013 DMR TWPE after EPA corrected errors identified in this preliminary category review (discussed in the sections below). As a point of comparison, Table 3-10 also shows the 2011 DMR facility count and TWPE for these top five pollutants, based on the 2013 Annual Review (U.S. EPA, 2014). PCBs, cyanide, and fluoride contribute over 70 percent of the original 2013 DMR TWPE for the Iron and Steel Manufacturing Category (prior to corrections discussed below). Additionally, EPA investigated DMR discharges of lead because it is a top TRI pollutant. Of these top pollutants, only cyanide and lead are regulated pollutants in the Iron and Steel Category effluent limitations guidelines and standards (ELGs) (40 CFR Part 420). Sections 3.4.3 through 3.4.6 present EPA’s investigation of DMR discharges of PCBs, cyanide, fluoride, and DMR and TRI-reported discharges of lead. EPA did not investigate total residual chlorine as

part of the 2015 Annual Review because it represents a small percentage (7 percent) of the 2013 DMR TWPE for the Iron and Steel Manufacturing Category.

Table 3-11 shows the five pollutants with the highest contribution to the 2013 TRI TWPE. Table 3-11 also presents the 2013 TRI TWPE after EPA corrected errors identified in this preliminary category review (discussed in the sections below). As a point of comparison, Table 3-11 also shows the 2011 TRI facility count and TWPE for these top five pollutants, based on the 2013 Annual Review (U.S. EPA, 2014). Nitrate compounds and lead and lead compounds contribute over 56 percent of the original 2013 TRI TWPE for the Iron and Steel Manufacturing Category (prior to corrections discussed below). Sections 3.4.6 and 3.4.7 present EPA’s investigation of reported TRI releases of lead and lead compounds and nitrate compounds. EPA did not conduct a facility-level investigation of polycyclic aromatic compounds, manganese and manganese compounds, and copper and copper compounds, as part of the 2015 Annual Review because they contribute a small amount of TWPE relative to the other top pollutants in the Iron and Steel Manufacturing Category. However, many facilities report manganese and manganese compound and copper and copper compound releases to TRI, as shown in Table 3-11.

**Table 3-10. Iron and Steel Manufacturing Category Top DMR Pollutants**

Pollutant <sup>b</sup>	2013 DMR Data <sup>a</sup>			2011 DMR Data <sup>a</sup>	
	Number of Facilities Reporting Pollutant <sup>c</sup>	Original TWPE	Corrected TWPE	Number of Facilities Reporting Pollutant <sup>c</sup>	TWPE <sup>d</sup>
PCBs	1	76,700	76,700	1	73,200
Cyanide	13	29,200	22,700	26	34,100
Fluoride	10	26,500	26,500	17	34,200
Total Residual Chlorine	20	13,700	13,700	29	28,600
Lead	33	8,760	8,760	63	12,600
<b>Top Pollutant Total</b>	<b>NA</b>	<b>155,000</b>	<b>148,000</b>	<b>NA</b>	<b>110,000</b>
<b>Iron and Steel Manufacturing Category Total</b>	<b>80</b>	<b>188,000</b>	<b>182,000</b>	<b>121</b>	<b>214,000</b>

Sources: *DMRLTOutput2013\_v1* (for 2013 TWPE); *DMRLTOutput2011\_v1* (for 2011 facility counts); 2013 Annual Review Report (for 2011 TWPE) (U.S. EPA, 2014).

Note: Sums of individual values may not equal the total presented, due to rounding.

NA: Not applicable

<sup>a</sup> Includes DMR data from both major and minor dischargers.

<sup>b</sup> Total residual chlorine discharges contribute 7 percent of the original 2013 category DMR TWPE. Therefore, EPA did not review total residual chlorine discharges as part of the 2015 Annual Review.

<sup>c</sup> Number of facilities with TWPE greater than zero.

<sup>d</sup> 2011 data after corrections were made during the 2013 Annual Review.

**Table 3-11. Iron and Steel Manufacturing Category Top TRI Pollutants**

Pollutant <sup>a</sup>	2013 TRI Data			2011 TRI Data	
	Number of Facilities Reporting Pollutant <sup>b</sup>	Original TWPE	Corrected TWPE	Number of Facilities Reporting Pollutant <sup>b</sup>	TWPE
Nitrate Compounds	56	25,400	25,400	55	24,600
Lead and Lead Compounds	133	22,700	20,600 <sup>c</sup>	135	24,300
Polycyclic Aromatic Compounds	5	6,910	6,910	4	11,400
Manganese and Manganese Compounds	114	5,680	5,680	117	6,250
Copper and Copper Compounds	79	4,990	4,990	78	4,270
<b>Top Pollutant Total</b>	<b>NA</b>	<b>65,700</b>	<b>63,600</b>	<b>NA</b>	<b>70,800</b>
<b>Iron and Steel Manufacturing Category Total</b>	<b>215</b>	<b>84,600</b>	<b>82,600</b>	<b>222</b>	<b>82,900</b>

Sources: *TRILTOOutput2011\_v1* (for 2011 TRI TWPE); *TRILTOOutput2013\_v1* (for 2013 TRI TWPE)

Note: Sums of individual values may not equal the total presented, due to rounding.

NA: Not applicable.

<sup>a</sup> Polycyclic aromatic compounds, manganese and manganese compounds, and copper and copper compounds each contribute less than 9 percent of the original 2013 category TRI TWPE. Therefore, EPA did not review polycyclic aromatic compound, manganese and manganese compound, or copper and copper compound releases as part of the 2015 Annual Review.

<sup>b</sup> Number of facilities with TWPE greater than zero.

<sup>c</sup> EPA identified two facilities with revisions to their 2013 TRI lead and lead compound releases. Section 3.4.6 discusses the correction from Charter Steel Cleveland. EPA also received corrected data from ArcelorMittal Burns Harbor LLC in Burns Harbor, IN (Bley, 2015). EPA revised the 2013 TRI lead and lead compound TWPE to incorporate the corrected data from these facilities.

### 3.4.3 Iron and Steel Manufacturing PCBs Discharges in DMR

EPA’s investigation of the PCB discharges revealed that one facility, U.S. Steel Fairless Hills Works, in Fairless Hills, PA, accounts for 100 percent of the 2013 DMR PCB discharges. In 2013, the facility reported 2.25 pounds of PCBs discharged, corresponding to 76,700 TWPE (*DMRLTOOutput2013\_v1*). EPA did not review 2011 PCB discharges from this facility as part of its 2013 Annual Review because the facility submitted 2011 PCB DMR data after EPA compiled the *DMRLTOOutput2011\_v1* database supporting the 2013 Annual Review.

As part of the 2015 Annual Review, EPA contacted U.S. Steel about the Fairless Hills facility. The facility began operation in 1952 and was a fully integrated steel mill. The facility included two blast furnaces, nine open-hearth furnaces, two coke batteries, an 80-inch hot strip mill, rolling mills, a sheet and tin department, hot dip galvanizing line, a pipe mill, and a deep-water vessel slip. The entire facility was located on nearly 4,000 acres along the Delaware River. At the time of construction and operation of the facility, PCBs were common in electrical equipment at the facility (Lasko, 2015).

In August 1991, the company closed and systematically demolished the pipe mill and the hot side of the plant, which included iron making, steel making, cokemaking, and hot rolling productions. In 1998, the remaining cold finishing operations, excluding the hot dip galvanizing



line, were permanently idled. The company has substantially redeveloped the site but several buildings remain in the sheet and tin area (Lasko, 2015).

Table 3-12 presents U.S. Steel Fairless Hills Works’ PCB discharges for 2011 through 2014. As shown, the PCB discharges have remained consistent from 2011 through 2013, and decreased in 2014. U.S. Steel does not know the source of the PCBs detected in discharges from the Fairless Hills Works’ facility; however, they have confirmed that the PCBs are not associated with the remaining hot dip galvanizing line. Therefore, the facility has attributed the discharges to historical production activities at the site (Lasko, 2015).

**Table 3-12. U.S. Steel Fairless Hills Works’ PCB Discharges for 2011-2014**

Year	PCB TWPE
2011	73,200
2012	69,800
2013	76,700
2014	25,800

Source: *DMRLTOutput2013\_v1*; DMR Loading Pollutant Tool (Loading Tool).

In 2003, EPA Regions 2 and 3 adopted a Total Maximum Daily Load (TMDL) for PCBs for Zones 2, 3, 4, and 5 of the tidal Delaware River. This change required U.S. Steel to perform PCB analyses on wastewater discharges using EPA Method 1668A. This wastewater sampling and analysis has narrowed the location of the potential sources of PCB discharges to the lower segment of the facility, near outfall 002. U.S. Steel is currently working with the Delaware River Basin Commission (DRBC) to investigate further this segment of the canal to determine the source of the PCB discharges (Lasko, 2015). The facility’s PCB discharges have decreased from 2013 to 2014, as shown in Table 3-12, and the PCB discharges are associated with historical production activities, not current operations. Additionally, the company is working with DRBC to determine the source of the PCB discharges.

#### **3.4.4 Iron and Steel Manufacturing Cyanide Discharges in DMR**

EPA’s investigation of the cyanide discharges revealed that two facilities, Mountain State Carbon, LLC<sup>16</sup>, in Follansbee, WV, and U.S. Steel Clairton Plant, Clairton, PA, account for 76 percent of the 2013 cyanide discharges (shown in Table 3-13). EPA reviewed cyanide discharges from both of these facilities as part of the 2011 and 2013 Annual Reviews (U.S. EPA, 2012, U.S. EPA, 2014). EPA did not investigate the remaining 11 facilities discharging cyanide as part of the 2015 Annual Review.

<sup>16</sup> This facility is named Severstal Wheeling, Inc. in the DMR database (*DMRLTOutput2013\_v1*). However, the facility’s permit lists the permittee as Mountain State Carbon, LLC.

**Table 3-13. Top 2013 DMR Cyanide Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
Mountain State Carbon, LLC	Follansbee, WV	10,900	12,100	41.4%
U.S. Steel Clairton Plant	Clairton, PA	9,050	10,000	34.4%
All other cyanide dischargers in the Iron and Steel Manufacturing Category <sup>a</sup>		6,390	7,090	24.2%
<b>Total</b>		<b>26,300</b>	<b>29,200</b>	<b>100%</b>

Source: *DMRLTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Eleven additional facilities submitted cyanide discharges in the 2013 DMR data.

Both of the top two facilities are cokemaking plants, i.e., they produce carbon-coke from coal for use in steelmaking. Cokemaking operations generate wastewater containing cyanide during the byproduct recovery process. For further information on cokemaking plants in the U.S., see Section 9.4 of the 2011 Annual Review Report (U.S. EPA, 2012).

During the 2002 Iron and Steel rulemaking, EPA established production-based limits for cyanide based on the performance of best available technology (BAT) for the cokemaking subcategory (40 CFR Part 420 Subpart A). The BAT production-based limits are based on a long-term average (LTA) of 2.965 mg/L, and a variability factor of 1.49 (U.S. EPA, 2002, Appendices D and E).

### **Mountain State Carbon**

Mountain State Carbon, LLC, in Follansbee, WV, discharges cyanide from two outfalls. EPA reviewed cyanide discharges from this facility as part of the 2011 and 2013 Annual Reviews. As part of the 2015 Annual Review, EPA contacted the facility and learned they received a revised permit, becoming effective on October 1, 2013. The new permit changed the naming of the outfalls; outfall 205 was renamed outfall 006 and outfall 005 was renamed outfall 004. Mountain State Carbon has discharges and separate permit limits for total cyanide and weak acid dissociable cyanide (CNWAD).<sup>17</sup> Table 3-14 presents the 2008 and 2013 permit limits for Mountain State Carbon for total cyanide and CNWAD (Smith, 2015).

**Table 3-14. Mountain State Carbon 2008 and 2013 Permit Limits**

Outfall Number	Total Cyanide Monthly Average Permit Limit	Total Cyanide Daily Maximum Permit Limit	CNWAD Monthly Average Permit Limit	CNWAD Daily Maximum Permit Limit
2008 Permit Limits				
005	None	None	0.0114 mg/L	0.0284 mg/L

<sup>17</sup> Because a permit may require a facility to measure a pollutant in more than one way, such as discharges of total cyanide and CNWAD, EPA groups the DMR data using a hierarchy to determine which parameter best represents the total pollutant discharges. This avoids double counting of discharges. For this reason, EPA grouped total cyanide and CNWAD discharges under DMR cyanide discharges. See Section 3.2.3.2 of the *Technical Support Document for the Annual Review of Existing Effluent Guidelines and Identification of Potential New Point Source Categories* (2009 Screening-Level Analysis (SLA) Report) for more information on pollutant groupings in DMR (U.S. EPA, 2009).

**Table 3-14. Mountain State Carbon 2008 and 2013 Permit Limits**

Outfall Number	Total Cyanide Monthly Average Permit Limit	Total Cyanide Daily Maximum Permit Limit	CNWAD Monthly Average Permit Limit	CNWAD Daily Maximum Permit Limit
205	24.5 lb/day (11.1 kg/day)	34.9 lb/day (15.8 kg/day)	None	None
2013 Permit Limits				
004 (previously 005)	Report Only	Report Only	Report Only	Report Only
006 (previously 205)	25.6 lb/day (11.6 kg/day) or 4.39 mg/L	36.6 lb/day (16.6 kg/day) or 9.31 mg/L	0.067 mg/L	0.12 mg/L

Source: WVDEP, 2008a; WVDEP, 2013b

The change in outfall designations mid-way through 2013 caused the Loading Tool to calculate facility discharge loads inaccurately. The Loading Tool calculates pollutant loadings from DMR data submitted by the facility. For months when a facility reports no flow and concentration data, the Loading Tool calculates estimated monthly discharges.<sup>18</sup> In this instance, the Loading Tool interpreted the new outfall numbers as representing two new outfalls, and assigned both “new” outfalls estimated monthly discharges (for months that had data missing), while continuing to apply estimated discharges to the old outfall numbers. As a result, cyanide discharges from this facility were, at first, substantially overestimated. EPA corrected this error, resulting in a decrease of the facility’s cyanide TWPE from 12,100 to 5,570.

Table 3-15 presents Mountain State Carbon’s 2013 DMR CNWAD discharges and NPDES monthly average permit limit for outfall 004 (previously outfall 005). Table 3-16 presents Mountain State Carbon’s 2013 DMR total cyanide discharges and NPDES monthly average permit limit for outfall 006 (previously outfall 205). As shown in Table 3-15, the CNWAD discharges for outfall 004 (previously outfall 005) are below permit limits. However, as shown in Table 3-16, the May 2013 quantity from outfall 006 (previously outfall 205) and the November 2013 concentration from outfall 006 exceed the facility permit limits.

**Table 3-15. Mountain State Carbon’s 2013 DMR CNWAD Discharges**

Outfall	Date	Reported Monthly Average Flow (MGD)	Reported Monthly Average Concentration (mg/L)	NPDES Monthly Average Permit Limit
005	31-Jan-13	7.58	0.0021	0.0114 mg/L
005	28-Feb-13	6.52	0.0021	0.0114 mg/L
005	31-Mar-13	13.5	0.0026	0.0114 mg/L
005	30-Apr-13	14.3	0.0016	0.0114 mg/L
005	31-May-13	13.5	0.0026	0.0114 mg/L
005	30-Jun-13	12.6	0.0009	0.0114 mg/L
005	31-Jul-13	9.39	0.0029	0.0114 mg/L

<sup>18</sup> For example, Mountain State Carbon’s 2013 permit renamed outfall 205 as 006; the two numbers represent the same outfall. Mountain State Carbon submitted nine months of concentration and flow data for outfall 205, and three months of concentration and flow data for the same outfall after its number was changed from 205 to 006. For outfall 205, the DMR Loading Tool calculated the total load for the year and estimated discharges for the three “missing” months. For outfall 006, the DMR Loading Tool calculated the total load for the year and estimated discharges for nine “missing months.”

**Table 3-15. Mountain State Carbon’s 2013 DMR CNWAD Discharges**

Outfall	Date	Reported Monthly Average Flow (MGD)	Reported Monthly Average Concentration (mg/L)	NPDES Monthly Average Permit Limit
005	31-Aug-13	8.68	0.0020	0.0114 mg/L
005	30-Sep-13	10.0	0.0021	0.0114 mg/L
004 <sup>a</sup>	31-Dec-13	13.2	0.013	Report Only

Sources: *DMRLTOutput2013\_v1*; Smith, 2015; WVDEP, 2008a; WVDEP, 2013b

<sup>a</sup> The revised permit changed the monitoring requirement for this outfall from monthly to quarterly, therefore, after September 2013, the facility only submitted CNWAD discharges for the outfall in December 2013.

**Table 3-16. Mountain State Carbon’s 2013 DMR Total Cyanide Discharges**

Outfall	Date	Reported Monthly Average Flow (MGD)	Reported Monthly Average Concentration (mg/L)	Reported Monthly Average Quantity (lb/d)	NPDES Monthly Average Permit Limit
205	31-Jan-13	0.57	NR	9.68	24.5 lb/d
205	28-Feb-13	0.6	NR	9.19	24.5 lb/d
205	31-Mar-13	0.58	NR	8.29	24.5 lb/d
205	30-Apr-13	0.59	NR	12.0	24.5 lb/d
205	31-May-13	0.5	NR	27.8 <sup>a</sup>	24.5 lb/d
205	30-Jun-13	0.69	NR	14.0	24.5 lb/d
205	31-Jul-13	0.73	NR	8.29	24.5 lb/d
205	31-Aug-13	0.65	NR	11.0	24.5 lb/d
205	30-Sep-13	0.7	NR	8.90	24.5 lb/d
006	31-Oct-13	0.578	3.4	NR	4.39 mg/L
006	30-Nov-13	0.606	4.5 <sup>a</sup>	NR	4.39 mg/L
006	31-Dec-13	0.6	2.1	NR	4.39 mg/L

Sources: *DMRLTOutput2013\_v1*; Smith, 2015; WVDEP, 2008a; WVDEP, 2013b

NR: Not Reported

<sup>a</sup> Cyanide concentration or quantity exceeds monthly average permit limit.

### ***U.S. Steel Clairton Plant***

U.S. Steel Clairton Plant discharges cyanide in cokemaking wastewater from outfall 183. EPA reviewed this facility’s cyanide discharges as part of the 2011 and 2013 Annual Reviews. As part of the 2015 Annual Review, EPA contacted U.S. Steel to discuss the Clairton Plant’s cyanide discharges. The facility received a revised permit in May 2012 that included revised cyanide permit limits. The facility appealed the revised cyanide permit limits and settled with the Pennsylvania Department of Environmental Protection (PA DEP) with a consent order in January 2014. PA DEP reissued the permit, which became effective in February 2015 (Lasko, 2015). Table 3-17 presents the facility’s 2002, 2012, and 2015 cyanide permit limits for outfall 183.

**Table 3-17. U.S. Steel Clairton Plant’s 2002, 2012, and 2015 Cyanide Permit Limits for Outfall 183**

Permit	Cyanide Monthly Average Permit Limit (mg/L)	Cyanide Monthly Average Permit Limit (lb/day)	Cyanide Daily Maximum Permit Limit (mg/L)	Cyanide Daily Maximum Permit Limit (lb/day)
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**Table 3-17. U.S. Steel Clairton Plant’s 2002, 2012, and 2015 Cyanide Permit Limits for Outfall 183**

2002 Permit Limits	5.5	118	10	216
2012 Permit Limits	4.41	90.5	6.30	129
2015 Permit Limits	5.5	94	10	134

Source: PA DEP, 2002, PA DEP, 2012, PA DEP, 2015

PA DEP extended the 2002 cyanide permit limits for outfall 183 until the revised 2012 permit became effective. However, because the facility appealed the cyanide permit limits in the revised 2012 permit, the facility had to meet the 2002 cyanide permit limits in 2013. Table 3-18 presents U.S. Steel’s 2013 monthly cyanide and flow discharge data for outfall 183. EPA calculated the cyanide concentrations using the reported quantity and average monthly flows. As shown, the facility’s discharge concentrations do not exceed the 2002, 2012, or 2015 permit limits and are below the LTA for cyanide calculated for the 2002 rulemaking (2.965 mg/L). The facility’s high cyanide TWPE is likely the result of the large amount of industrial activity at the site. This facility has historically been the top coke producer in the U.S. (U.S. EPA, 2002).

**Table 3-18. U.S. Steel Clairton Plant’s 2013 DMR Cyanide Discharges for Outfall 183**

Date	Reported Monthly Average Flow (MGD)	Reported Monthly Average Quantity (kg/d)	Calculated Monthly Average Concentration (mg/L)
31-Jan-13	2.4	7.27	0.800
28-Feb-13	2.49	9.18	0.974
31-Mar-13	2.34	14.2	1.60
30-Apr-13	2.43	16.7	1.82
31-May-13	2.38	9.38	1.04
30-Jun-13	2.41	7.66	0.840
31-Jul-13	2.59	10.1	1.03
31-Aug-13	2.44	20.3	2.20
30-Sep-13	2.4	11.3	1.24
31-Oct-13	2.37	10.3	1.15
30-Nov-13	2.45	10.2	1.10
31-Dec-13	2.48	7.61	0.811

Sources: *DMRLTOutput2013\_v1*

### 3.4.5 Iron and Steel Manufacturing Fluoride Discharges in DMR

EPA’s investigation of the fluoride discharges revealed that four facilities, account for 94 percent of the reported 2013 fluoride discharges (shown in Table 3-19). EPA did not investigate the remaining six facilities discharging fluoride as part of the 2015 Annual Review.

**Table 3-19. Top 2013 DMR Fluoride Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
U.S. Steel Gary Works <sup>a</sup>	Gary, IN	324,000	9,730	36.7%
ArcelorMittal Weirton LLC <sup>b</sup>	Weirton, WV	240,000	7,190	27.1%
U.S. Steel Granite City Works	Granite City, IL	154,000	4,620	17.4%
ArcelorMittal Burns Harbor LLC	Burns Harbor, IN	114,000	3,410	12.9%
All other fluoride dischargers in the Iron and Steel Manufacturing Category <sup>c</sup>		53,100	1,590	6.00%
<b>Total</b>		<b>885,000</b>	<b>26,500</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> This facility is named USS Gary Works in the DMR database (*DMRLTOutput2013\_v1*) and in the 2013 Annual Review Report (U.S. EPA, 2014). However, the facility’s permit lists the permittee as U.S. Steel Gary Works.

<sup>b</sup> This facility is named Mittal Steel USA Weirton Inc. in the DMR database (*DMRLTOutput2013\_v1*) and Weirton Steel Corporation in the 2013 Annual Review Report (U.S. EPA, 2014). However, the facility’s permit lists the permittee as ArcelorMittal Weirton LLC.

<sup>c</sup> Six additional facilities submitted fluoride discharges in the 2013 DMR data.

The Iron and Steel Manufacturing Category ELGs do not include discharge limits for fluoride. During previous annual reviews, EPA researched treatment technologies that were capable of removing fluoride (not specific to iron and steel wastewater discharges) and found they achieve effluent fluoride concentrations between 2 mg/L and 15 mg/L (WC&E, 2006; Ionics, n.d.; GCIP, 2002). EPA used these effluent fluoride concentrations as benchmarks for initial comparison of fluoride discharges from iron and steel manufacturing facilities.

### ***U.S. Steel Gary Works***

U.S. Steel Gary Works in Gary, IN, discharges fluoride into the Grand Calumet River from outfalls 005, 028, and 030 (IDEM, 2014). EPA previously reviewed fluoride discharges from this facility as part of the 2013 Annual Review. Outfall 005 discharges cooling water and condensate from many operations along with stormwater runoff. Outfalls 028 and 030 are discharges from lagoons that collect continuous caster non-contact cooling water, cooling tower blowdown, stormwater runoff, steam condensate, and slab spray cooling water. The facility’s permit requires monitoring fluoride in discharges from outfalls 005, 028, and 030, but does not include fluoride limits (IDEM, 2014).

Table 3-20 presents U.S. Steel Gary Works’ fluoride discharge data for 2013. EPA calculated the fluoride concentrations using the quantity and average monthly flows. The fluoride concentrations range from 0.306 mg/L to 4.01 mg/L. Table 3-21 also presents the facility’s fluoride discharges for 2011 through 2014. As shown, discharges were nearly unchanged from 2011 to 2012, but decreased steadily from 2012 to 2014. Similar to the 2013 Annual Review, EPA found that fluoride concentrations for U.S. Steel Gary Works fall at the low end of the range of concentrations achievable by current technologies described above.

**Table 3-20. U.S. Steel Gary Works' 2013 DMR Fluoride Discharges**

Outfall	Date	Reported Monthly Average Flow (MGD)	Reported Monthly Average Quantity (kg/d)	Calculated Monthly Average Concentration (mg/L)
005	31-Jan-13	38.8	84.3	0.574
005	28-Feb-13	41.4	77.1	0.492
005	31-Mar-13	41.7	86.6	0.549
005	30-Apr-13	42.6	86.1	0.534
005	31-May-13	41.4	66.6	0.425
005	30-Jun-13	44.7	68.4	0.404
005	31-Jul-13	45.3	72.1	0.421
005	31-Aug-13	47.5	71.2	0.396
005	30-Sep-13	47.7	62.1	0.344
005	31-Oct-13	43.7	67.1	0.406
005	30-Nov-13	46.2	53.5	0.306
005	31-Dec-13	52.4	62.5	0.315
028	31-Jan-13	8.6	105	3.23
028	28-Feb-13	7.2	86.6	3.18
028	31-Mar-13	7.1	86.1	3.20
028	30-Apr-13	7.1	74.3	2.76
028	31-May-13	8.4	87.5	2.75
028	30-Jun-13	8.1	105	3.42
028	31-Jul-13	8.2	109	3.51
028	31-Aug-13	8.6	103	3.16
028	30-Sep-13	9.2	119	3.42
028	31-Oct-13	7.6	82.9	2.88
028	30-Nov-13	8.4	92.1	2.90
028	31-Dec-13	7.9	120	4.01
030	31-Jan-13	20.5	249	3.21
030	28-Feb-13	20.2	251	3.28
030	31-Mar-13	18.6	234	3.33
030	30-Apr-13	18.7	205	2.90
030	31-May-13	20.9	224	2.83
030	30-Jun-13	18.7	228	3.23
030	31-Jul-13	19.0	265	3.69
030	31-Aug-13	19.4	245	3.34
030	30-Sep-13	19.4	257	3.51
030	31-Oct-13	14.1	163	3.06
030	30-Nov-13	17.4	224	3.40
030	31-Dec-13	18	264	3.87

Source: *DMRLOutput2013\_v1*

**Table 3-21. U.S. Steel Gary Works' Fluoride Discharges for 2011 – 2014**

Year	Pounds of Fluoride Discharged	Fluoride TWPE
2011	339,000	10,200
2012	346,000	10,400
2013	324,000	9,730
2014	293,000	8,800

Source: *DMRLOutput2013\_v1*; DMR Loading Tool.

### **ArcelorMittal Weirton LLC**

ArcelorMittal Weirton LLC in Weirton, WV, discharges fluoride from outfalls 003 and 004 into the Ohio River and Harmon Creek, respectively. The facility discharges cooling water, stormwater runoff, and process wastewater from outfall 003, and untreated stormwater through outfall 004. EPA previously reviewed fluoride discharges from this facility as part of the 2013 Annual Review. The facility’s 2008 permit calls for monitoring of fluoride discharges from outfall 003, but does not include fluoride limits. The fluoride permit limit for outfall 004 is 1.4 mg/L monthly average and 2.2 mg/L daily maximum (WVDEP, 2008b).

Table 3-22 presents the facility’s fluoride discharge data for 2013. As described above, EPA determined that current wastewater technologies (not specific to iron and steel) are achieving effluent fluoride concentrations between 2 mg/L and 15 mg/L. EPA determined that 2013 fluoride concentrations from outfall 004, shown in Table 3-22 are below the facility’s permit limit and below concentrations achievable by current technologies. However, the fluoride concentrations from outfall 003 are substantially higher than outfall 004, by an order of magnitude. Table 3-23 presents the facility’s fluoride discharges for 2011 through 2014. As shown, discharges have remained consistent from 2011 through 2013, and have decreased from 2013 to 2014.

The facility received a revised permit, effective May 2014. This permit includes fluoride limits for outfall 003 of 4.3 mg/L monthly average and 5.9 mg/L daily maximum, effective May 1, 2017, based on water quality standards (WVDEP, 2014; WVDEP, 2013a). As the facility comes into compliance with the new permit limits, EPA expects that fluoride discharges from ArcelorMittal Weirton LLC will decrease in future DMRs.

**Table 3-22. ArcelorMittal Weirton LLC’s 2013 DMR Fluoride Discharges**

<b>Outfall</b>	<b>Date</b>	<b>Reported Monthly Average Flow (MGD)</b>	<b>Reported Monthly Average Concentration (mg/L)</b>
003	31-Jan-13	10.3	8.05
003	31-Mar-13	10.9	6.38
003	30-Jun-13	11.7	9.1
003	31-Dec-13	7.3	7.51
004	31-Jan-13	0.77	0.27
004	28-Feb-13	0.82	0.25
004	31-Mar-13	0.66	0.28
004	30-Apr-13	1.28	0.3
004	31-May-13	0.6	0.3
004	30-Jun-13	0.7	0.3
004	31-Jul-13	1.6	0.3
004	31-Aug-13	0.6	0.4
004	30-Sep-13	0.7	0.4
004	31-Oct-13	0.7	0.4
004	30-Nov-13	0.7	0.4
004	31-Dec-13	0.8	0.4

Source: *DMRLTOutput2013\_v1*



**Table 3-23. ArcelorMittal Weirton LLC’s Fluoride Discharges for 2011 – 2014**

Year	Pounds of Fluoride Discharged	Fluoride TWPE
2011	331,000	9,940
2012	357,000	10,700
2013	240,000	7,190
2014	216,000	6,490

Source: *DMRLTOutput2013\_v1*; DMR Loading Tool.

### ***U.S. Steel Granite City Works***

U.S. Steel Granite City Works, in Granite City, IL, discharges fluoride from outfall 001 to Horseshoe Lake. Discharges consist of wastewater from numerous sources, including the blast furnace, the hot strip mill, the galvanizing lines, continuous casters, maintenance shops, laboratories, the coke plant, the cold mill, and the continuous pickler. Discharges also contain landfill leachates, sanitary, stormwater runoff, and boiler blowdown. EPA has not previously reviewed fluoride discharges from this facility. The facility received a revised permit, effective June 1, 2015. The fluoride limits were not revised, but continue to include a 4 mg/L (834 lb/day) daily maximum limit for fluoride from outfall 001, with no monthly average fluoride limits (ILEPA, 2015).

Table 3-24 presents the facility’s fluoride discharge data for 2013. EPA calculated the fluoride concentrations using the reported quantities and average monthly flows. The fluoride concentrations range from 2.17 mg/L to 4.49 mg/L. EPA determined that fluoride concentrations for U.S. Steel Granite City Works are generally below those achievable by current technologies, described above. However, the June and July 2013 monthly average fluoride concentrations exceed the daily maximum permit limit. Table 3-25 presents the facility’s fluoride discharges for 2011 through 2014. As shown, discharge levels decreased from 2011 to 2014.

**Table 3-24. U.S. Steel Granite City Works’ 2013 DMR Fluoride Discharges for Outfall 001**

Date	Reported Monthly Average Flow (MGD)	Reported Monthly Average Quantity (kg/d)	Calculated Monthly Average Concentration (mg/L)
31-Jan-13	12.4	174	3.72
28-Feb-13	15.4	175	3.00
31-Mar-13	16.4	190	3.06
30-Apr-13	16.1	186	3.05
31-May-13	15.2	175	3.04
30-Jun-13	14.7	250	4.49 <sup>a</sup>
31-Jul-13	14.5	244	4.46 <sup>a</sup>
31-Aug-13	17.1	198	3.06
30-Sep-13	16.9	175	2.74
31-Oct-13	19.2	161	2.22
30-Nov-13	18.0	220	3.24
31-Dec-13	17.9	147	2.17

Source: *DMRLTOutput2013\_v1*.

<sup>a</sup> Fluoride concentration exceeds daily maximum permit limit.

**Table 3-25. U.S. Steel Granite City Works' Fluoride Discharges for 2011 – 2014**

Year	Pounds of Fluoride Discharged	Fluoride TWPE
2011	163,000	4,880
2012	158,000	4,750
2013	154,000	4,620
2014	141,000	4,240

Source: *DMRLTOutput2013\_v1*; DMR Loading Tool.

### ***ArcelorMittal Burns Harbor LLC***

ArcelorMittal Burns Harbor LLC, in Burns Harbor, IN, discharges fluoride from outfall 002. EPA has not previously reviewed fluoride discharges from this facility. Table 3-26 presents the facility's fluoride discharge data for 2013. EPA calculated the fluoride concentrations using the quantity and average monthly flows. As shown, the fluoride concentrations range from 0.070 mg/L to 0.194 mg/L. EPA determined that fluoride concentrations for ArcelorMittal Burns Harbor are generally below those achievable by current technologies, described above. Additionally, Table 3-27 presents the facility's fluoride discharges for 2011 through 2014. As shown, discharges increased from 2011 to 2012, but by 2014 had fallen back to below 2011 levels.

**Table 3-26. ArcelorMittal Burns Harbor 2013 DMR Fluoride Discharges for Outfall 002**

Date	Reported Monthly Average Flow (MGD)	Reported Monthly Average Quantity (kg/d)	Calculated Monthly Average Concentration (mg/L)
31-Jan-13	255	141	0.146
28-Feb-13	257	164	0.169
31-Mar-13	255	166	0.172
30-Apr-13	233	165	0.187
31-May-13	194	51.7	0.070
30-Jun-13	209	137	0.173
31-Jul-13	241	122	0.134
31-Aug-13	251	134	0.141
30-Sep-13	260	148	0.150
31-Oct-13	268	197	0.194
30-Nov-13	225	155	0.182
31-Dec-13	197	119	0.160

Source: *DMRLTOutput2013\_v1*

**Table 3-27. ArcelorMittal Burns Harbor Fluoride Discharges for 2011 – 2014**

Year	Pounds of Fluoride Discharged	Fluoride TWPE
2011	84,700	2,540
2012	124,000	3,710
2013	114,000	3,410
2014	81,700	2,450

Source: *DMRLTOutput2013\_v1*; DMR Loading Tool.

### 3.4.6 Iron and Steel Manufacturing Lead and Lead Compound Discharges in DMR and TRI

EPA has not previously reviewed lead discharges from Iron and Steel Manufacturing facilities. Lead is a regulated pollutant in the Iron and Steel Manufacturing ELG, with limitations for seven of the thirteen subcategories.<sup>19</sup>

EPA’s review of the lead DMR data revealed that 33 facilities account for 8,760 TWPE, with no facility contributing more than 2,300 TWPE. EPA’s investigation of TRI-reported lead and lead compound data revealed that 133 facilities account for 22,700 TWPE. EPA identified one facility, Charter Steel Cleveland, in Cuyahoga Heights, OH, that accounts for 4,360 TWPE (19 percent of the 2013 TRI lead and lead compound releases) (shown in Table 3-28). EPA further reviewed lead discharges for Charter Steel, as discussed below. EPA did not conduct facility-specific investigations of the 33 facilities with DMR lead discharges or the remaining 132 facilities reporting TRI releases of lead and lead compounds as part of the 2015 Annual Review because no facility contributes more than 2,300 TWPE.

**Table 3-28. Top Facilities Reporting 2013 TRI Lead and Lead Compound Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
Charter Steel Cleveland	Cuyahoga Heights, OH	1,950	4,360	19.2%
All other lead and lead compound releases in the Iron and Steel Manufacturing Category <sup>a</sup>		8,170	18,300	80.8%
<b>Total</b>		<b>10,100</b>	<b>22,700</b>	<b>100%</b>

Source: *TRILTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 132 additional facilities reported lead and lead compound releases in the 2013 TRI.

Charter Steel Cleveland in Cuyahoga Heights, OH, reported both indirect and direct releases of lead and lead compounds to TRI. As part of the 2015 Annual Review, EPA contacted the facility to discuss their lead and lead compound TRI releases. A stormwater permit regulates the facility’s stormwater releases to the Cuyahoga River. The facility does not have an individual NPDES permit. In addition to the direct stormwater release, the facility has two onsite pretreatment plants that discharge to the Northeast Ohio Regional Sewer District. The facility estimates indirect lead and lead compound releases by sampling at each pretreatment plant (Lawniczak, 2015).

The facility contact also explained that while calculating the amount of lead and lead compound releases transferred, they incorrectly converted from milligrams of lead to pounds of lead, resulting in an overestimate of the pounds reported to TRI for 2013. Correcting for this error decreases the facility’s lead and lead compounds TRI TWPE from 4,360 to 1,090.

<sup>19</sup> Subpart B, Sintering Subcategory, Subpart C, Ironmaking Subcategory, Subpart D, Steelmaking Subcategory, Subpart E, Vacuum Degassing Subcategory, Subpart F, Continuous Casting Subcategory, Subpart I, Acid Pickling Subcategory, and Subpart J, Cold Forming Subcategory include limitations for lead.

The individual facility TWPE associated with lead discharges across the Iron and Steel Manufacturing Category appears to be relatively low (less than 2,300); however, a large number of facilities reported lead discharges on DMRs and lead and lead compound releases to TRI in 2013.

### 3.4.7 Iron and Steel Manufacturing Nitrate Compound Releases in TRI

EPA has not previously reviewed nitrate compound discharges from Iron and Steel Manufacturing facilities. Nitrate compounds are not regulated pollutants in the Iron and Steel Manufacturing Category ELG; however, three subparts have ammonia as N limitations.<sup>20</sup>

EPA's investigation of the nitrate compound data revealed that one facility, AK Steel Corporation, in Rockport, IN, accounts for 47 percent of the 2013 nitrate releases (shown in Table 3-29). EPA did not investigate the remaining 55 facilities reporting releases of nitrate as part of the 2015 Annual Review because no individual facility contributes more than 3,200 TWPE.

**Table 3-29. Top Facilities Reporting 2013 TRI Nitrate Compound Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
AK Steel Corporation, Rockport Works	Rockport, IN	15,900,000	11,900	46.6%
All other nitrate-releasing facilities in the Iron and Steel Manufacturing Category <sup>a</sup>		18,200,000	13,600	53.4%
<b>Total</b>		<b>34,100,000</b>	<b>25,400</b>	<b>100%</b>

Source: *TRILTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 55 additional facilities reported nitrate compound releases in the 2013 TRI.

AK Steel Corporation Rockport Works, in Rockport, IN, is an integrated steel mill, manufacturing iron and steel products and coke and cokemaking byproducts. The facility releases directly to the Grand Calumet River and Lake Michigan. The facility has report-only requirements for ammonia as N in their NPDES permit, but does not have nitrate compound reporting requirements (IDEM, 2011). As part of the 2015 Annual Review, EPA contacted AK Steel to discuss the Rockport facility nitrate compound releases reported to TRI.

The AK Steel contact stated that nitrate compound releases are calculated the same at each AK Steel facility. Each facility obtains a weekly composite outfall sample and analyzes it for nitrate as nitrogen. The facility averages the weekly concentrations for each month, multiplies by the average daily flow and the number of days in the month, and converts to pounds. This determines the pounds per month of nitrate as nitrogen released at the outfall. To calculate the amount of nitrate compounds as required for TRI reporting, the facility then converts the pounds per month of nitrate as nitrogen to pounds of nitrate as nitrate compounds,

<sup>20</sup> Subpart A, Cokemaking Subcategory, Subpart B, Sintering Subcategory, and Subpart C, Ironmaking Subcategory, include limitations for Ammonia as N.

by multiplying by the molecular weight ratio of nitrate to nitrogen.<sup>21</sup> This step determines the pounds of nitrate compounds released per month. The facility totals each month to obtain the annual total nitrate compounds released (Miracle, 2015). Table 3-30 presents the nitrate compound releases for 2008 through 2013 for AK Steel Rockport Works. As shown, releases decreased from 2010 to 2012, then increased again in 2013. The facility’s nitrate compound releases are the same order of magnitude as the other 55 facilities with nitrate compound releases combined, as shown in Table 3-29.

**Table 3-30. AK Steel Rockport Works’ TRI-Reported Nitrate Compound Releases for 2008 – 2013**

Year	Pounds of Nitrate Released	Nitrate TWPE
2008	17,300,000	12,900
2009	12,100,000	9,050
2010	23,500,000	17,600
2011	18,400,000	13,700
2012	14,400,000	10,800
2013	15,900,000	11,900

Source: *TRILTOOutput2013\_v1*; DMR Loading Tool.

In general, the individual facility TWPE associated with nitrate discharges across the Iron and Steel Manufacturing Category appears to be relatively low (less than 3,200); however, a large number of facilities reported nitrate compound releases to TRI in 2013.

### 3.4.8 Iron and Steel Manufacturing Category Findings

The estimated toxicity of the Iron and Steel Manufacturing Category discharges resulted primarily from PCBs, cyanide, fluoride, and lead discharges reported on DMRs, and nitrate compound, lead and lead compound, manganese and manganese compound, and copper and copper compound releases reported to TRI. From the 2015 Annual Review, EPA found:

- **PCBs.** One facility, U.S. Steel Fairless Hills Works, in Fairless Hills, PA, accounts for 100 percent of the DMR PCB discharges. The facility is working with the Delaware River Basin Commission (DRBC) to determine the source of the PCB discharges, but believes the discharges are from historical production activities on the site. The facility’s PCB discharges have also decreased from 2013 to 2014. For these reasons, EPA does not consider the facility’s PCB discharges to be representative of discharges across the category.
- **Cyanide.** Two facilities, Mountain State Carbon, in Follansbee, WV, and U.S. Steel Clairton Plant, in Clairton, PA, account for 76 percent of the DMR cyanide discharges. EPA reviewed the cyanide discharges and found:
  - EPA identified an error in Mountain State Carbon’s cyanide discharges. Correcting this error decreases the facility’s cyanide TWPE from 12,100 to 5,570. However, two months of cyanide discharges from one outfall at Mountain State Carbon exceed the facility’s permit limits.

<sup>21</sup> Molecular weight ratio is 4.43: the molecular weight of nitrate is 62; the molecular weight of nitrogen is 14.

- U.S. Steel Clairton Plant's cyanide discharges are below permit limits and the LTA for cyanide calculated for the 2002 rulemaking. The facility's high cyanide TWPE is likely the result of the large amount of industrial activity at the facility, as it has historically been the top coke producer in the U.S.
- Because the majority of cyanide discharges from the Iron and Steel Manufacturing Category are attributed to two facilities, EPA does not consider them to be representative of the Iron and Steel Category.
- **Fluoride.** Four facilities account for 94 percent of DMR fluoride discharges. EPA determined that current wastewater technologies (not specific to iron and steel) are achieving effluent concentrations between 2 mg/L and 15 mg/L. For two of the top fluoride discharging facilities, EPA concluded that the fluoride concentrations are generally below those achievable by current technologies. One facility, ArcelorMittal Weirton LLC in Weirton, WV, received a revised permit in 2014 that includes fluoride limits for outfalls 003 and 004. Therefore, EPA expects that fluoride discharges will decrease on future DMRs for this facility. The remaining facility, U.S. Steel Granite City Works, has discharges above permit limits.
- **Lead.** One facility, Charter Steel Cleveland, in Cuyahoga Heights, OH, accounts for 19 percent of the TRI lead and lead compound releases. The facility identified a data error in the indirect releases reported to TRI. Correcting this error, decreases the facility's lead and lead compound TWPE from 4,360 to 1,100. After the correction for Charter Steel Cleveland, EPA determined that all facilities with lead discharges in the 2013 DMR and TRI databases contributed less than 2,300 TWPE each. However, EPA notes that a large number of facilities reported lead and lead compounds to TRI and lead discharges on DMRs in 2013 (133 and 33 facilities, respectively).
- **Nitrate.** One facility, AK Steel Corporation Rockport Works, in Rockport, IN, accounts for 47 percent of the TRI nitrate compound releases and bases its load reported to TRI on sampling data. The individual facility TWPE associated with nitrate discharges across the remainder of the Iron and Steel Manufacturing Category appears to be relatively low (less than 3,200); however, EPA notes that a large number of facilities (56 facilities) reported nitrate releases to TRI in 2013.
- **Manganese and Copper.** EPA did not further investigate manganese and manganese compounds and copper and copper compounds as part of the 2015 Annual Review because they contribute a small amount of TWPE relative to the other top pollutants (less than 6,000 TWPE each). However, EPA notes that a large number of facilities reported manganese and manganese compound and copper and copper compound releases to TRI in 2013 (114 and 79 facilities, respectively) and these pollutants are not regulated by the Iron and Steel Manufacturing ELGs.

### 3.4.9 Iron and Steel Manufacturing Category References

1. Bley, Doug. 2015. Telephone Communication Between Doug Bley, ArcelorMittal Burns Harbor LLC, and William Swietlik, U.S. EPA, Re: 2013 TRI Lead Discharges. (June 30). EPA-HQ-OW-2015-0665. DCN 08129.

2. ERG. 2015. Preliminary Category Review – Facility Data Review for Point Source Category – 420 –Iron and Steel Manufacturing. (September). EPA-HQ-OW-2015-0665. DCN 08130.
3. GCIP. 2002. General Chemical Industrial Products. Chapter 14 – Wastewater and Water Treatment. EPA-HQ-OW-2004-0032-2606.
4. IDEM. 2011. Indiana Department of Environmental Management. *NPDES Permit: AK Steel Rockport Works, Rockport, IN (IN0059650)*. (July 1). EPA-HQ-OW-2015-0665. DCN 08131.
5. IDEM. 2014. Indiana Department of Environmental Management. *Amended NPDES Permit: U.S. Steel Gary Works, Gary, IN (IN0000281)*. (March 21). EPA-HQ-OW-2015-0665. DCN 08132.
6. ILEPA. 2015. Illinois Environmental Protection Agency. *NPDES Permit: U.S. Steel Granite City Works, Granite City, IL (IL0000329)*. (May 22). EPA-HQ-OW-2015-0665. DCN 08133.
7. Ionics. n.d. The EnChem® Process for Fluoride Removal. *Wastewater Treatment for the Microelectronics Industry*. EPA-HQ-OW-2004-0032-2605.
8. Lasko, Brian. 2015. Telephone and Email Communication Between Brian Lasko, U.S. Steel, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR and TRI Discharges for U.S. Steel Facilities. (May 27). EPA-HQ-OW-2015-0665. DCN 08134.
9. Lawniczak, Jay. 2015. Telephone and Email Communication Between Jay Lawniczak, Charter Steel Cleveland, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 TRI Lead and Lead Compound Discharges for Charter Steel. (June 1). EPA-HQ-OW-2015-0665. DCN 08135.
10. Miracle, Dave. 2015. Telephone and Email Communication Between Dave Miracle, AK Steel, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 TRI Nitrate Discharges. (May 21). EPA-HQ-OW-2015-0665. DCN 08136.
11. PADEP. 2002. Pennsylvania Department of Environmental Protection. *NPDES Permit: U.S. Steel Clairton Works, Clairton, PA (PA0004472)*. (February 1). EPA-HQ-OW-2015-0665. DCN 08137.
12. PADEP. 2012. Pennsylvania Department of Environmental Protection. *NPDES Permit: U.S. Steel Clairton Works, Clairton, PA (PA0004472)*. (May 1). EPA-HQ-OW-2015-0665. DCN 08138.
13. PADEP. 2015. Pennsylvania Department of Environmental Protection. *NPDES Permit: U.S. Steel Clairton Works, Clairton, PA (PA0004472)*. (February 1). EPA-HQ-OW-2015-0665. DCN 08139.
14. Smith, Patrick. 2015. Telephone and Email Communication Between Patrick Smith, Mountain State Carbon, and Kimberly Bartell, Eastern Research Group,

- Inc., Re: 2013 DMR Cyanide Discharges. (May 13). EPA-HQ-OW-2015-0665. DCN 08140.
15. U.S. EPA. 2002. *Development Document for Final Effluent Limitations Guidelines and Standards for the Iron and Steel Manufacturing Point Source Category*. Washington, D.C. EPA-821-R-02-004. EPA-HQ-OW-2010-0824-0119.
  16. U.S. EPA. 2009. *Technical Support Document for the Annual Review of Existing Effluent Guidelines and Identification of Potential New Point Source Categories*. EPA-821-R-09-007. Washington, D.C. (October). EPA-HQ-OW-2008-0517-0515.
  17. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.
  18. U.S. EPA. 2014. *The 2013 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-003. EPA-HQ-OW-2014-0170-0077.
  19. U.S. EPA. 2016. *Preliminary 2016 Effluent Guidelines Program Plan*. Washington, D.C. (June). EPA-821-R-16-001. EPA-HQ-OW-2015-0665. DCN 08208.
  20. WC&E. 2006. Wastech Controls & Engineering, Inc. Fluoride Wastewater Treatment (FWT) HF Neutralization or Fluoride Reduction. EPA-HQ-OW-2004-0032-2604.
  21. WVDEP. 2008a. West Virginia Department of Environmental Protection. *NPDES Permit: Mountain State Carbon, Follansbee, WV (WV0004499)*. (January 15). EPA-HQ-OW-2010-0824-0067.
  22. WVDEP. 2008b. West Virginia Department of Environmental Protection. *NPDES Permit: Arcelormittal Weirton Inc. (Weirton Steel Corporation), Weirton, WV (WV0003336)*. (July 28). EPA-HQ-OW-2014-0170-0019.
  23. WVDEP. 2013a. West Virginia Department of Environmental Protection. *NPDES Fact Sheet Addendum: Arcelormittal Weirton Inc. (Weirton Steel Corporation), Weirton, WV (WV0003336)*. EPA-HQ-OW-2015-0665. DCN 08310.
  24. WVDEP. 2013b. West Virginia Department of Environmental Protection. *NPDES Permit: Mountain State Carbon, Follansbee, WV (WV0004499)*. (August 29). EPA-HQ-OW-2015-0665. DCN 08141.
  25. WVDEP. 2014. West Virginia Department of Environmental Protection. *NPDES Permit: Arcelormittal Weirton Inc. (Weirton Steel Corporation), Weirton, WV (WV0003336)*. (March 18). EPA-HQ-OW-2015-0665. DCN 08142.



### 3.5 Landfills (40 CFR Part 445)

EPA identified the Landfills Category for preliminary review because it ranks high again, in terms of toxic-weighted pound equivalents (TWPE), in the final 2015 combined point source category rankings. Previously, EPA reviewed discharges from this category as part of the 2010 and 2011 Annual Reviews in which it also ranked high (U.S. EPA, 2011, 2012). This section summarizes the results of the 2015 Annual Review. EPA focused its 2015 review on discharges of cadmium, selenium, and iron because of their high TWPE relative to the other pollutants discharged by facilities in the Landfills Category. Of these three pollutants, only iron was reviewed in the 2010 and 2011 Annual Reviews. For the 2015 Annual Review, available discharge data also showed significant contributions of cadmium and selenium.

#### 3.5.1 Landfills Category 2015 Toxicity Rankings Analysis

Table 3-31 compares the toxicity ranking analyses (TRA) data for the Landfills Category from the 2011, 2013, and 2015 Annual Reviews. EPA did not conduct the TRA in 2012 or 2014, but instead reviewed additional data sources as part of the even-year annual review, as described in Section 2.2.1 of EPA’s Preliminary 2016 Plan (U.S. EPA, 2016). As discussed in this section, during the 2015 Annual Review, EPA identified data corrections that affected the 2013 Discharge Monitoring Report (DMR) data and TWPE. The bottom row of Table 3-31 shows the corrected data resulting from this review.

**Table 3-31. Landfills Category TRI and DMR Facility Counts and Discharges Reported in 2009, 2011, and 2013**

Year of Discharge	Year of Review	Landfills Category Facility Counts <sup>a</sup>			Landfills Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities	TRI TWPE <sup>b</sup>	DMR TWPE <sup>c</sup>	Total TWPE
2009	2011	19	7	194	2,750	29,700 <sup>d</sup>	32,400 <sup>d</sup>
2011	2013	1	5	190	42,900 <sup>e</sup>	19,300	62,100
2013	2015	4	4	175	235	166,000 <sup>f</sup>	166,000 <sup>f</sup>
						116,000 <sup>g</sup>	116,000 <sup>g</sup>

Sources: *TRIRelases2009\_v2*, *DMRLoads2009\_v2*, and 2011 Annual Review Report (for 2009 DMR data) (U.S. EPA, 2012); *DMRLTOOutput2011\_v1* (for 2011 DMR); *TRILTOOutput2011\_v1* (for 2011 TRI); *DMRLTOOutput2013\_v1* (for 2013 DMR); *TRILTOOutput2013\_v1* (for 2013 TRI)

Note: EPA did not evaluate 2010 or 2012 DMR and TRI data

Note: TWPE values are rounded to three significant figures. Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Number of facilities with TWPE greater than zero.

<sup>b</sup> Releases include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.

<sup>c</sup> Includes DMR data from both major and minor dischargers.

<sup>d</sup> 2009 data after corrections were made during the 2011 Annual Review.

<sup>e</sup> The majority of the 2011 TRI TWPE was attributed to one facility, Clean Harbors Deer Park LLC in La Porte, TX. This facility was reassigned to the Unassigned Waste Facility Category.

<sup>f</sup> 2013 data prior to corrections made during the 2015 Annual Review.

<sup>g</sup> 2013 data after corrections were made during the 2015 Annual Review.

As shown in Table 3-31, the total TWPE increased from 2009 to 2013, while the number of Toxic Release Inventory (TRI) facilities and DMR facilities decreased from 2009 to 2013.

### 3.5.2 Landfills Category Pollutants of Concern

EPA’s 2015 review of the Landfills Category focused on the 2013 DMR discharges because the DMR data dominate the category’s combined TWPE. Table 3-32 shows the five pollutants with the highest contribution to the 2013 DMR TWPE. Table 3-32 also presents the 2013 DMR TWPE after EPA corrected two errors identified in this preliminary category review (discussed in the sections below). As a point of comparison, Table 3-32 shows the 2011 DMR facility count and TWPE for these top pollutants, based on the 2013 Annual Review (U.S. EPA, 2014).

Cadmium, selenium, and iron contribute more than 88 percent of the original 2013 DMR TWPE for the Landfills Category (prior to corrections discussed below). Cadmium, selenium, and iron are not regulated in the Landfills Category effluent limitations guidelines and standards (ELGs) (40 CFR Part 445). EPA’s investigations of reported discharges of the top three pollutants are presented in Sections 3.5.3, 3.5.4, and 3.5.5. EPA did not investigate the other pollutants, including arsenic and silver, as part of the 2015 Annual Review, because they represent a small percentage (6 percent) of the 2013 DMR TWPE for the Landfills Category.

**Table 3-32. Landfills Category Top DMR Pollutants**

Pollutant <sup>b</sup>	2013 DMR Data <sup>a</sup>			2011 DMR Data <sup>a</sup>	
	Number of Facilities Reporting Pollutant <sup>c</sup>	Original TWPE	Corrected TWPE	Number of Facilities Reporting Pollutant <sup>c</sup>	TWPE
Cadmium	25	91,700	91,700	28	1,370
Selenium	23	40,800	195	23	249
Iron	138	14,500	4,910	136	5,050
Arsenic	37	8,010	8,010	32	1,370
Silver	9	2,270	2,270	8	1,590
<b>Top Pollutant Total</b>	<b>NA</b>	<b>157,000</b>	<b>107,000</b>	<b>NA</b>	<b>9,630</b>
<b>Landfills Category Total</b>	<b>179</b>	<b>166,000</b>	<b>116,000</b>	<b>195</b>	<b>19,300</b>

Sources: *DMRLTOutput2013\_v1* (for 2013 TWPE); *DMRLTOutput2011\_v1* (for 2011 TWPE)

Note: Sums of individual values may not equal the total presented, due to rounding.

NA: Not applicable.

<sup>a</sup> Includes DMR data from both major and minor dischargers.

<sup>b</sup> Arsenic and silver discharges combined contribute 6 percent of the original 2013 category DMR TWPE. Therefore, EPA did not review arsenic or silver discharges as part of the 2015 Annual Review.

<sup>c</sup> Number of facilities with TWPE greater than zero.

### 3.5.3 Landfills Category Cadmium Discharges in DMR

EPA’s investigation of the cadmium discharges revealed that one facility, Henderson City Landfill in Henderson, KY, accounts for over 99 percent of the 2013 DMR cadmium discharges

(shown in Table 3-33). EPA did not investigate the remaining facilities discharging cadmium as part of the 2015 Annual Review.

**Table 3-33. Top 2013 DMR Cadmium Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
Henderson City Landfill	Henderson, KY	3,940	91,100	99.3
All other cadmium dischargers in the Landfills Category <sup>a</sup>		26.4	610	0.7
<b>Total</b>		<b>3,970</b>	<b>91,700</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 24 additional facilities submitted cadmium discharges in the 2013 DMR data.

Henderson City Landfill in Henderson, KY, discharges cadmium through two outfalls and reports quarterly cadmium concentrations, shown in Table 3-34. As shown in Table 3-34, March 2013 discharges from outfall 001 are significantly greater than other discharges. As part of the 2015 Annual Review, EPA contacted the facility about their cadmium discharges. The facility contact confirmed the 2013 cadmium discharges and explained that the March 2013 concentration is an outlier. The facility experienced a large rainstorm event during this month, which caused a leachate tank flood on the same day sampling was conducted at the outfall. The March 2013 sample was not representative of typical operation conditions at the facility (Williams, 2015). EPA reviewed 2014 cadmium discharges and confirmed the total cadmium TWPE to be 0.8.

**Table 3-34. Henderson City Landfill’s 2013 DMR Quarterly Cadmium Discharges**

Outfall	Date	Monthly Average Flow (MGD)	Monthly Average Cadmium Concentration (mg/L)
001	31-Mar-13	0.100	52.50
001	30-Jun-13	0.014	0.001
001	30-Sep-13	No Discharge	
001	31-Dec-13	0.006	0.00005
002	31-Mar-13	0.036	0.001
002	30-Jun-13	0.021	0.001
002	30-Sep-13	0.001	0.001
002	31-Dec-13	0.005	0.001

Source: *DMRLTOutput2013\_v1*.

### 3.5.4 Landfills Category Selenium Discharges in DMR

EPA’s investigation of the selenium discharges revealed that one facility, South Carolina Generating Company (SCGENCO)/Williams Ash Disposal Facility in Moncks Corner, SC, accounts for over 99 percent of the 2013 DMR selenium discharges (shown in Table 3-35). EPA did not investigate the remaining facilities discharging selenium as part of the 2015 Annual Review.

**Table 3-35. Top 2013 DMR Selenium Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
SCGENCO/Williams Ash Disposal Facility	Moncks Corner, SC	36,300	40,600	99.5
All other selenium dischargers in the Landfills Category <sup>a</sup>		175	195	0.5
<b>Total</b>		<b>36,500</b>	<b>40,800</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 22 additional facilities submitted selenium discharges in the 2013 DMR data.

SCGENCO/Williams Ash Disposal Facility is a landfill for the disposal of coal ash and gypsum from SCGENCO/Williams Station in Goose Creek, SC (SH DHEC, 2013a). SCGENCO discharges selenium from one outfall, which contains ash landfill runoff, ash landfill leachate, and truck wash water (SC DHEC, 2013b). As part of the 2015 Annual Review, EPA contacted the South Carolina Department of Health and Environmental Control (SC DHEC) to confirm the facility's selenium discharges. SC DHEC indicated that the facility's 2013 selenium concentrations were reported in units of micrograms per liter (µg/L) instead of milligrams per liter (mg/L) (Rippy, 2015). Table 3-36 presents the original and corrected concentrations, and average flow rates from the facility. After correcting the concentrations, the facility's selenium TWPE decreases from 40,600 to 40.4.

**Table 3-36. SCGENCO/Williams Ash Disposal Facility's 2013 DMR Original and Corrected Selenium Discharges from Outfall 001**

Date	Monthly Average Flow (MGD)	Original Monthly Average Selenium Concentration (mg/L)	Corrected Monthly Average Selenium Concentration (mg/L)
31-Jan-13	0.27	6.1	0.0061
29-Feb-13	1.21	15.8	0.0158
31-Mar-13	0.33	16.4	0.0164
30-Apr-13	0.16	21.1	0.0211
31-May-13	0.45	22.9	0.0229
30-Jun-13	No Discharge		
31-Jul-13	1.17	25.6	0.0256
31-Aug-13	1.29	28.4	0.0284
30-Sep-13	No Discharge		

Source: *DMRLTOutput2013\_v1*.

SC DHEC also provided the facility's NPDES permit and permit rationale. SCGENCO/Williams Ash Disposal Facility's NPDES permit (SC0046175), effective March 4, 2009 to September 30, 2013, required monthly monitoring and reporting for selenium (SC DHEC, 2009a, 2009b). When the permit was reissued in 2013 (effective October 1, 2013), neither monitoring requirements nor permit limits were placed on selenium because SC DHEC determined that the selenium discharges showed no reasonable potential to cause or contribute to a water quality violation (SC DHEC, 2013a, 2013b). For this reason, selenium discharges were only reported through September 2013, as shown in Table 3-36.

Additionally, after reviewing SCGENCO/Williams Ash Disposal Facility’s NPDES permit, EPA determined that the landfill operates and receives waste directly from the SCGENCO Williams Station coal-fired power plant. The Landfills ELGs do not apply to discharges of landfill wastewater from landfills operated in conjunction with other industrial or commercial operations when the landfill only receives wastes generated by the industrial or commercial operation directly associated with the landfill (40 CFR Part 445). For this reason, EPA determined that SCGENCO should instead be classified under the Steam Electric Power Generating Category (40 CFR Part 423).

### 3.5.5 Landfills Category Iron Discharges in DMR

EPA’s investigation of iron discharges revealed that two facilities, Bluegrass Containment LLC, in Hartford, KY, and Bavarian Trucking, in Walton, KY, account for over 85 percent of the 2013 DMR iron discharges (shown in Table 3-37). EPA did not investigate the remaining facilities discharging iron as part of the 2015 Annual Review.

**Table 3-37. Top 2013 DMR Iron Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
Bluegrass Containment LLC	Hartford, KY	1,720,000	9,620	66.2
Bavarian Trucking	Walton, KY	501,000	2,810	19.3
All other iron dischargers in the Landfills Category <sup>a</sup>		375,000	2,100	14.5
<b>Total</b>		<b>2,590,000</b>	<b>14,500</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 136 additional facilities submitted iron discharges in the 2013 DMR data.

### *Bluegrass Containment LLC*

Bluegrass Containment LLC discharges iron from one outfall and reports monthly iron concentrations, shown in Table 3-38 for 2013. As shown in Table 3-38, the February 2013 iron concentration reported from outfall 001 was far greater than other months’ concentrations. As part of the 2015 Annual Review, EPA contacted the Kentucky Department for Environmental Protection, which confirmed the February 2013 iron concentration (Milburn, 2015). EPA also contacted the laboratory that submitted the DMR on behalf of Bluegrass Containment LLC. The laboratory contact indicated that the February 2013 iron concentration was measured in µg/L and incorrectly converted to mg/L on the DMR by multiplying by 1,000 instead of dividing by 1,000. The correct iron concentration is 0.525 mg/L (Gish, 2015). Table 3-38 presents the original and corrected concentrations, and average flow rates from the facility. Correcting the concentrations, decreases the facility’s iron TWPE from 9,620 to 0.015, reducing the Landfills Category iron TWPE from 14,500 to 4,910, as shown in Table 3-32.

**Table 3-38. Bluegrass Containment LLC's 2013 DMR Original and Corrected Iron Discharges from Outfall 001**

Date	Monthly Average Flow (MGD)	Original Monthly Average Iron Concentration (mg/L)	Corrected Monthly Average Iron Concentration (mg/L)
31-Jan-13	0.36	1.07	1.07
29-Feb-13	0.014	525,000	0.525
31-Mar-13	0.108	0.66	0.66
30-Apr-13	0.004	0.14	0.14
31-May-13	0.072	0.27	0.27
30-Jun-13	0.57	0.24	0.24
31-Jul-13	0.014	0.101	0.101
31-Aug-13	0.001	0.15	0.15
30-Sep-13	0.005	0.15	0.15
31-Oct-13	0.00001	0.36	0.36
30-Nov-13	0.001	0.36	0.36
31-Dec-13	0.004	0.15	0.15

Source: *DMRLTOutput2013\_v1*.

### ***Bavarian Trucking***

Bavarian Trucking discharges iron from one outfall and reports daily maximum and monthly average iron concentrations, shown in Table 3-39. The facility has a daily maximum iron limit of 4 mg/L. As shown in Table 3-39, the iron concentrations exceed the permit limit during several months in 2013. The facility's Clean Water Act compliance status was classified as Category I<sup>22</sup> during 2013 due to several effluent violations of permit limits for iron and other pollutants.

<sup>22</sup> Severity of violations is calculated according to the Clean Water Act regulations, which have specific criteria specifying the duration, severity, and type of violations that rise to the level of Significant Noncompliance (SNC). SNC can occur at major facilities. The calculation of "Category I" violations is equivalent to the SNC calculations, but because the violations occur at smaller dischargers (non-major), EPA does not classify the violations as SNC.

**Table 3-39. Bavarian Trucking’s 2013 DMR Iron Discharges from Outfall 001**

<b>Date</b>	<b>Monthly Average Flow (MGD)</b>	<b>Daily Maximum/Monthly Average Iron Concentration (mg/L)<sup>a</sup></b>
31-Jan-13	0.160	13.4
29-Feb-13	0.209	87.2
31-Mar-13	No Discharge	
30-Apr-13	0.170	9.11
31-May-13	0.084	35.7
30-Jun-13	467	3.61
31-Jul-13	No Discharge	
31-Aug-13	0.320	852
30-Sep-13	No Discharge	
31-Oct-13	0.039	3.12
30-Nov-13	0.029	0.326
31-Dec-13	0.380	17.7

Source: *DMRLTOutput2013\_v1*; US EPA, 2015.

<sup>a</sup> The facility reported the same concentration values for daily maximum and monthly average for each monitoring period in 2013.

### 3.5.6 Landfills Category Findings

The estimated toxicity of the Landfills Category discharges resulted primarily from cadmium, selenium, and iron discharges reported on DMRs. From the 2015 Annual Review, EPA found:

- **Cadmium.** One facility, Henderson City Landfill in Henderson, KY, accounts for more than 99 percent of the 2013 DMR cadmium discharges. The large discharge can be attributed to a single sampling event that was performed after a leachate tank flood and was not representative of typical operating conditions at the facility. For this reason, EPA does not consider these discharges to be representative of the Landfills Category.
- **Selenium.** One facility, SCGENCO/Williams Ash Disposal Facility, in Moncks Corner, SC, accounts for more than 99 percent of the 2013 DMR selenium discharges. SC DHEC confirmed that the selenium concentrations were reported in units of µg/L instead of mg/L. Incorporating this correction decreases the facility’s selenium TWPE from 40,600 to 40.4.
- **Iron.** Two facilities, Bluegrass Containment in Hartford, KY, and Bavarian Trucking in Walton, KY, account for over 85 percent of the iron discharges in the 2013 DMR data. EPA identified an error in the concentration data for iron for Bluegrass Containment. With this error corrected, the facility’s iron TWPE decreases from 9,620 to 0.015, reducing the Landfills Category iron TWPE from 14,500 to 4,910. Bavarian Trucking exceeded its permit limit for iron during 2013.

### 3.5.7 Landfills Category References

1. ERG. 2015. *Preliminary Category Review – Facility Data Review for Point Source Category – 445 – Landfills*. (September). EPA-HQ-OW-2015-0665. DCN 08143.

2. Gish, Beverly. 2015. Telephone and Email Communication Between Beverly Gish, SMR Laboratories, Inc., and Eva Knoth, Eastern Research Group, Inc., Re: 2013 *DMR Iron Discharges from Bluegrass Containment LLC*. (May 21). EPA-HQ-OW-2015-0665. DCN 08144.
3. Milburn, Jerry. 2015. Telephone and Email Communication Between Jerry Milburn, Kentucky Department for Environmental Protection, and Eva Knoth, Eastern Research Group, Inc., Re: 2013 *DMR Iron Discharges from Bluegrass Containment LLC*. (May 21). EPA-HQ-OW-2015-0665. DCN 08145.
4. Rippy, Crystal. 2015. Telephone and Email Communication Between Crystal Rippy, South Carolina Department of Health and Environmental Compliance, and Eva Knoth, Eastern Research Group, Inc., Re: 2013 *DMR Selenium Discharges from SCGENCO/A.M. Williams Ash Disposal Facility*. (April 30). EPA-HQ-OW-2015-0665. DCN 08146.
5. SC DHEC. 2009a. South Carolina Department of Health and Environmental Compliance. *NPDES Permit Fact Sheet and Rationale: South Carolina Generating Company (SCGENCO) A.M. Williams Station-Highway 52 Ash Disposal Facility (SC0046175)*. (February 27). EPA-HQ-OW-2015-0665. DCN 08147.
6. SC DHEC. 2009b. South Carolina Department of Health and Environmental Compliance. *NPDES Permit: South Carolina Generating Company (SCGENCO) A.M. Williams Station-Highway 52 Ash Disposal Facility (SC0046175)*. (March 4). EPA-HQ-OW-2015-0665. DCN 08148.
7. SC DHEC. 2013a. South Carolina Department of Health and Environmental Compliance. *NPDES Permit: South Carolina Generating Company (SCGENCO) A.M. Williams Station-Highway 52 Ash Disposal Facility (SC0046175)*. (August 30). EPA-HQ-OW-2015-0665. DCN 08149.
8. SC DHEC. 2013b. South Carolina Department of Health and Environmental Compliance. *NPDES Permit Fact Sheet and Rationale: South Carolina Generating Company (SCGENCO) A.M. Williams Station-Highway 52 Ash Disposal Facility (SC0046175)*. (August 29). EPA-HQ-OW-2015-0665. DCN 08150.
9. U.S. EPA. 2011. *Technical Support document for the 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-820-R-10-021. EPA-HQ-OW-2008-0517-0618.
10. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.
11. U.S. EPA. 2014. *The 2013 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-003. EPA-HQ-OW-2014-0170-0077.



12. U.S. EPA. 2016. *Preliminary 2016 Effluent Guidelines Program Plan*. Washington, D.C. (June). EPA-821-R-16-001. EPA-HQ-OW-2015-0665. DCN 08208.
13. Williams, Brian. 2015. Telephone and Email Communication Between Brian Williams, Henderson City Landfill, Henderson, KY, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Cadmium Discharges. (February 12). EPA-HQ-OW-2015-0665. DCN 08151.

### 3.6 Meat and Poultry Products (40 CFR Part 432)

EPA identified the Meat and Poultry Products (Meat and Poultry) Category for preliminary review because it ranks high again, in terms of toxic-weighted pound equivalents (TWPE), in the final 2015 combined point source category rankings. Previously, EPA reviewed discharges from this category as part of the 2011 to 2013 Annual Reviews in which it also ranked high (U.S. EPA, 2012, 2014a, 2014b). This section summarizes the results of the 2015 Annual Review. EPA focused its 2015 review on discharges of nitrate compounds and hydrogen sulfide because of their high TWPE relative to other pollutants discharged by facilities in the Meat and Poultry Category. Nitrate, reviewed as part of the 2011 and 2012 Annual Reviews, continues to be a top pollutant of concern. Hydrogen sulfide was added as a Toxic Release Inventory (TRI) reporting requirement in 2012. As a result, in 2013, hydrogen sulfide contributed a substantial amount of TWPE for the category. Therefore, for the 2015 Annual Review, available discharge data also showed significant contributions of hydrogen sulfide to the Meat and Poultry Category TWPE.

#### 3.6.1 Meat and Poultry Category 2015 Toxicity Rankings Analysis

Table 3-40 compares the toxicity rankings analyses (TRA) data for the Meat and Poultry Category from the 2011, 2013, and 2015 Annual Reviews. EPA did not conduct the TRA in 2012 or 2014, but instead reviewed additional data sources as part of the even-year annual review, as described in Section 2.2.1 of EPA’s Preliminary 2016 Plan (U.S. EPA, 2016). During the 2015 Annual Review, EPA did not identify any data corrections to the 2013 discharge monitoring report (DMR) or TRI data for the Meat and Poultry Category.

**Table 3-40. Meat and Poultry Category TRI and DMR Facility Counts and Discharges Reported in 2009, 2011, and 2013**

Year of Discharge	Year of Review	Meat and Poultry Category Facility Counts <sup>a</sup>			Meat and Poultry Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities	TRI TWPE <sup>b</sup>	DMR TWPE <sup>c</sup>	Total TWPE
2009	2011	173	38	88	53,800	17,200	71,000
2011	2013	156	32	99	39,100	13,700 <sup>d</sup>	52,800 <sup>d</sup>
2013	2015	179	29	46	81,500	8,220	89,700

Sources: *TRIRelases2009\_v2*, *DMRLoads2009\_v2*, and 2011 Annual Review Report (for 2009 DMR and TRI data) (U.S. EPA, 2012); *DMRLTOutput2011\_v1* (for 2011 DMR); *TRILTOutput2011\_v1* (for 2011 TRI); *DMRLTOutput2013\_v1* (for 2013 DMR); *TRILTOutput2013\_v1* (for 2013 TRI).

Note: EPA did not evaluate 2010 or 2012 DMR and TRI data.

Note: TWPE values are rounded to three significant figures. Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Number of facilities with TWPE greater than zero.

<sup>b</sup> Releases include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals. The 2013 TRI TWPE also includes TWPE associated with reported releases of hydrogen sulfide. Facilities began reporting releases of hydrogen sulfide to TRI in 2012.

<sup>c</sup> Includes DMR data from both major and minor dischargers.

<sup>d</sup> 2011 data after corrections were made during the 2013 Annual Review.

As shown in Table 3-40, the total number of facilities reporting releases to TRI, and their respective TWPE, decreased from 2009 to 2011, but increased in 2013. During that same time period, the total number of facilities reporting discharges on DMRs and their respective TWPE decreased. The increase in TRI TWPE in 2013 is primarily due to releases from the facilities described in the sections below.

### 3.6.2 Meat and Poultry Category Pollutants of Concern

EPA’s 2015 review of the Meat and Poultry Category focused on the 2013 TRI releases because the TRI data dominate the category’s combined TWPE. Table 3-41 shows the five pollutants with the highest contribution to the 2013 TRI TWPE. As a point of comparison, Table 3-41 also shows the 2011 TRI facility count and TWPE for these top five pollutants, based on the 2013 Annual Review (U.S. EPA, 2014b). Nitrate compounds and hydrogen sulfide contribute more than 98 percent of the total 2013 TRI TWPE. Because hydrogen sulfide was added as a TRI reporting requirement in 2012, no hydrogen sulfide releases were reported in 2011. EPA’s investigations of reported releases of the top two pollutants are presented in Sections 3.6.3 and 3.6.4. EPA did not investigate the other pollutants, including ammonia, sodium nitrite, and mercury and mercury compounds, as part of the 2015 Annual Review, because they represent a small percentage (less than 2 percent) of the 2013 TRI TWPE for the Meat and Poultry Category.

**Table 3-41. Meat and Poultry Category Top TRI Pollutants**

Pollutant <sup>a</sup>	2013 TRI Data		2011 TRI Data	
	Number of Facilities Reporting Pollutant <sup>b</sup>	TWPE	Number of Facilities Reporting Pollutant <sup>b</sup>	TWPE
Nitrate Compounds	117	42,300	105	38,000
Hydrogen Sulfide	11	37,700	NA <sup>c</sup>	NA <sup>c</sup>
Ammonia	118	797	114	876
Sodium Nitrite	11	455	5	16.8
Mercury and Mercury Compounds	1	155	1	170
<b>Top Pollutant Total</b>	<b>NA</b>	<b>81,500</b>	<b>NA</b>	<b>39,100</b>
<b>Meat and Poultry Category Total</b>	<b>179</b>	<b>81,500</b>	<b>156</b>	<b>39,100</b>

Sources: *TRILTOOutput2013\_v1* (for 2013 TWPE); *TRILTOOutput2011\_v1* (for 2011 TWPE).

Note: Sums of individual values may not equal the total presented, due to rounding.

NA: Not applicable.

<sup>a</sup> Ammonia, sodium nitrite, and mercury and mercury compounds releases combined contribute less than 2 percent of the 2013 category TRI TWPE. Therefore, EPA did not review any of these releases as part of the 2015 Annual Review.

<sup>b</sup> Number of facilities with TWPE greater than zero.

<sup>c</sup> Hydrogen sulfide was added as a TRI reporting requirement in 2012; it was not a TRI-listed chemical in 2011.

### 3.6.3 Meat and Poultry Category Nitrate Compound Releases in TRI

EPA’s investigation of the nitrate compound releases revealed that 15 facilities account for approximately 59 percent of the 2013 TRI nitrate compound releases (as shown in Table 3-42). EPA did not investigate the remaining facilities discharging nitrate compounds as part of the

2015 Annual Review. EPA reviewed nitrate compound releases from the Meat and Poultry Category in detail as part of the 2011 and 2012 Annual Reviews.<sup>23</sup> Therefore, Table 3-42 also presents the 2009 TRI nitrate compound TWPE for comparison purposes.

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<sup>23</sup> EPA reviewed 2009 DMR and TRI data as part of the 2011 and 2012 Annual Reviews.

**Table 3-42. Top Facilities Reporting 2013 TRI Nitrate Compound Releases**

Facility Name	2013 TRI Data					2009 TRI Data <sup>a</sup>
	Location	Subcategory	Nitrate Compound Pounds Released	Nitrate Compound TWPE	Percent of Nitrate Compound Category TWPE	Nitrate Compound TWPE
Cargill Meat Solutions Corp.	Schuyler, NE	B	4,770,000	3,560	8.42%	2,870
Cargill Meat Solutions Corp.	Ottumwa, IA	Undetermined	3,090,000	2,310	5.45%	686 <sup>b</sup>
John Morrell & Co.	Sioux Falls, SD	Undetermined	2,870,000	2,150	5.07%	17.2 <sup>b</sup>
Pilgrim's Pride Corp Mt. Pleasant Complex	Mount Pleasant, TX	K	2,590,000	1,930	4.56%	1,040
Cargill Meat Solutions Corp.	Beardstown, IL	B	2,540,000	1,900	4.49%	2,730
Tyson Fresh Meats Inc. – Joslin, IL	Hillsdale, IL	B	2,530,000	1,890	4.46%	3,320
Lewiston Processing Plant	Lewiston Woodville, NC	L	2,050,000	1,530	3.61%	2,440
Tyson Fresh Meats Inc.	Lexington, NE	B	1,890,000	1,410	3.34%	3,730
Tyson Fresh Meats Inc.	Columbus Junction, IA	B	1,880,000	1,400	3.32%	1,210
Smithfield Packing Co., Inc., Tar Heel Div.	Tar Heel, NC	B	1,840,000	1,370	3.24%	2,800
Tyson Farms Inc. – Carthage, MS Processing Plant	Carthage, MS	K	1,720,000	1,280	3.03%	251 <sup>b</sup>
Accomac Processing Plant	Accomac, VA	K	1,520,000	1,130	2.68%	1,550
JBS Plainwell	Plainwell, MI	B	1,330,000	997	2.35%	1,300
Cargill Meat Solutions Corp.	Fort Morgan, CO	Undetermined	1,290,000	966	2.28%	761 <sup>b</sup>
Tyson Farms Inc. - Blountsville Processing Plant	Blountsville, AL	L	1,290,000	964	2.28%	1,110
Remaining Facilities Reporting Nitrate Compounds Releases <sup>c</sup>			23,500,000	17,500	41.4 %	23,500
<b>Total</b>			<b>56,700,000</b>	<b>42,300</b>	<b>100%</b>	<b>46,900</b>

Source: *TRIRelases2009\_v2* (for 2009 TRI), *TRILTOOutput2013\_v1* (for 2013 TRI); 2011 Annual Review Report (for 2009 TRI data and Subcategories) (U.S. EPA, 2012); and 2012 Annual Review Report (for Subcategories) (U.S. EPA, 2014a).

Note: EPA determined subcategories by reviewing available permits.

<sup>a</sup> EPA reviewed 2009 nitrate compound releases as part of the 2011 and 2012 Annual Reviews. Therefore, 2009 data is presented for comparison purposes.

<sup>b</sup> The facility was not reviewed as part of the 2011 or 2012 Annual Reviews.

<sup>c</sup> 102 additional facilities reported nitrate compound releases in the 2013 TRI database, which account for approximately 41 percent of the category's nitrate compounds 2013 TRI TWPE.

EPA has identified several forms of nitrogen as pollutants of concern in meat and poultry processing wastewaters: total Kjeldahl nitrogen (TKN), ammonia nitrogen, and nitrite plus nitrate-nitrogen. Because protein is a major component of both meat and blood, meat and poultry wastewaters can contain high concentrations of nitrogen. The biological removal of nitrogen from wastewaters is a two-step process beginning with nitrification followed by denitrification. Under anaerobic conditions, ammonia is oxidized to nitrite, which is oxidized to nitrate in the process of nitrification. Following the anaerobic conditions, nitrite and nitrate are reduced microbially by denitrification, producing nitrogen gas as the principal end product (U.S. EPA, 2002).

Nitrite and nitrate-nitrogen are rarely present before aerobic biological treatment due to the lack of oxygen necessary for microbially-mediated nitrification. Therefore, the principal source of nitrite and nitrate-nitrogen is nitrification. Biological treatment is often required, at least seasonally, to satisfy effluent limitations for the discharge of ammonia nitrogen to surface waters. Many NPDES permits are written with seasonal limits for ammonia because the lower pH and temperature of the receiving waters during winter reduce the toxicity of ammonia by converting it to ammonium (U.S. EPA, 2002).

40 CFR Part 432 regulates wastewater discharges from Meat and Poultry processing plants in 12 subcategories of products and product groups. EPA last updated effluent limitations guidelines and standards (ELGs) for the Meat and Poultry Category on September 8, 2004 (69 FR 54476). In addition to best practicable control technology (BPT) limitations, 40 CFR Part 432 includes limitations based on the best available technology economically achievable (BAT) and new source performance standards (NSPS). 40 CFR Part 432 regulates conventional pollutants (BOD, fecal coliform, oil and grease, and TSS) for all subparts. Excluding Subpart E (Small Processors), all subparts include ammonia as nitrogen (N) and total nitrogen limitations for BAT, at plants exceeding a threshold pounds of annual live weight kill (LWK) (40 CFR Part 432) (U.S. EPA, 2014a). BAT treatment varies based on subcategory. Table 3-43 lists the BAT options for the Meat and Poultry subcategories. The Meat and Poultry Category ELGs do not regulate nitrate.

**Table 3-43. BAT Treatment for the Meat and Poultry Subcategories**

Subcategory	Treatment Unit Processes
A–D	Dissolved air flotation, lagoon, nitrification, denitrification, and disinfection
E	NA (no BAT limits)
F–I	Dissolved air flotation, lagoon, nitrification, denitrification, and disinfection
K	Dissolved air flotation, nitrification, denitrification, and disinfection
L	Dissolved air flotation, lagoon, nitrification, denitrification, and disinfection
J	Dissolved air flotation, nitrification, denitrification, and disinfection

Source: U.S. EPA, 2002.

Thirteen meat and poultry facilities reporting releases of nitrate compounds to TRI were reviewed as part of the 2011 and 2012 Annual Reviews. EPA determined that the majority of these facilities are in compliance with the ELGs for total nitrogen, or are currently awaiting revised permits that will include total nitrogen permit limitations. As a result, EPA assigned the Meat and Poultry Category a lower priority for revision (U.S. EPA, 2014a). As part of the 2015

Annual Review, EPA determined all facilities reviewed as part of the 2011 and 2012 Annual Reviews also reported nitrate releases to TRI in 2013; however, only eleven are included in the top fifteen facilities listed in Table 3-42.

As part of the 2015 Annual Review, EPA reviewed the 2013 and 2009 TRI nitrate releases for the top 15 facilities listed in Table 3-42. Many of these facilities reported a decrease in nitrate compound releases to TRI from 2009 to 2013. EPA specifically reviewed the five facilities with the greatest increase in nitrate TWPE from 2009 to 2013 (three of which were reviewed previously). Therefore, EPA has focused on the following facilities for the 2015 Annual Review:

- Cargill Meat Solutions Corporation, Schuyler, NE
- Cargill Meat Solutions Corporation, Ottumwa, IA
- John Morrell & Co., Sioux Falls, SD
- Pilgrim's Pride Corporation, Mount Pleasant, TX
- Tyson Farm, Inc., Carthage, MS

***Cargill Meat Solutions Corp. (Schuyler, NE)***

Cargill Meat Solutions Corporation's facility in Schuyler, NE, is a complex beef slaughterhouse, covered by 40 CFR Part 432, Subcategory B, with a production of approximately 6,500,000 pounds per day in LWK. EPA previously reviewed this facility as part of the 2011 and 2012 Annual Review Reports (U.S. EPA, 2012, 2014a). The facility's nitrate compound releases account for approximately 8 percent of the 2013 TRI nitrate compounds TWPE.<sup>24</sup> Treated process wastewater is discharged via outfalls 001 and 003 to surface water and agricultural land application sites, respectively. Process wastewater discharged to outfall 001 is treated with a dissolved air flotation unit, anaerobic lagoon cells, a four-chambered sequential batch reactor (an activated sludge plant), a chlorine contact basin, and dechlorination. Discharges of nutrient-rich water from outfall 003 (treated process wastewater and non-contact cooling water) are used on agricultural land (the facility does not have an outfall 002) (NE DEQ, 2009).

The facility permit, issued October 2009, includes seasonal limits for ammonia as N for outfalls 001 and 003, which are lower than the effluent limitations specified in 40 CFR Part 432. The permit does not include limits for total nitrogen. The permit writer for Cargill Meat Solutions Corp. stated that the ammonia as N limits were more stringent than the water quality criteria and are based on waste load allocations (Ewoldt, 2012). The ammonia as N permit limits are (NE DEQ, 2009):

- *Winter:* 4.0 mg/L monthly average, 8.0 mg/L daily maximum (equal to BAT limitations).
- *Spring:* 2.58 mg/L monthly average, 5.17 mg/L daily maximum.
- *Summer:* 1.89 mg/L monthly average, 3.79 mg/L daily maximum.

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<sup>24</sup> Cargill Meat Solutions in Schuyler, NE, accounted for 6 percent of the 2009 TRI nitrate compound TWPE (U.S. EPA, 2012).

***Cargill Meat Solutions Corp. (Ottumwa, IA)***

Cargill Meat Solutions, Corp. (Cargill Ottumwa) in Ottumwa, IA, is a hog slaughterhouse. Treated process wastewater is discharged via outfall 001 to the Des Moines River. The treatment for process wastewater discharged through outfall 001 consists of grit removal, settling, chlorination, and an oxidation ditch. Non-contact cooling water from refrigeration and processing equipment is discharged via outfall 002. Wastewater from the facility's third outfall, outfall 801, is a combined waste stream from outfalls 001 and 002 (IA DNR, 2009).

The facility permit, issued May 2009, includes total nitrogen permit limits of 134 mg/L monthly average and 194 mg/L daily maximum. The permit includes ammonia as N limits of 4.0 mg/L monthly average and 8.0 mg/L daily maximum. These limits are based on 40 CFR Part 432 (IA DNR, 2009).

***John Morrell & Company (Sioux Falls, SD)***

As part of the 2015 Annual Review, EPA contacted the South Dakota Department of Environment and Natural Resources (SD DENR). The state confirmed that the John Morrell & Company facility in Sioux Falls, SD, is currently operating under an administratively continued permit which expired March 31, 2005. According to this permit, the facility discharges treated process wastewater via outfall 001 (SD DENR, 2000b).

The facility's 2000 permit does not include total nitrogen limits. The permit includes the following ammonia as N permit limits, which are based on a total maximum daily load based on the background water quality of the Big Sioux River near Sioux Falls, the surface water quality standard for un-ionized ammonia (0.04 mg/L), and best professional judgment. The 30-day average ammonia limits are based on their allocation of the allowable waste load (SD DENR, 2000a; SD DENR, 2000b):

- *Spring (April – May):* 70 lb/day monthly average, 123 lb/day daily maximum.
- *Summer (June – August):* 58 lb/day monthly average, 102 lb/day daily maximum.
- *Fall (September – October):* 75 lb/day monthly average, 131 lb/day daily maximum.
- *Winter (November – March):* 163 lb/day monthly average, 285 lb/day daily maximum.

Table 3-44 presents the John Morrell Sioux Falls facility's ammonia as N 2013 DMR average daily concentration and wastewater flow data for outfall 001. EPA calculated the average quantities using the reported concentrations and wastewater flows, and compared them to the seasonal permit limits for ammonia as N. As shown, the 2013 ammonia as N discharges are below the allowable period load based on the permit limits.

**Table 3-44. John Morrell's Sioux Falls Facility's 2013 DMR Discharges for Ammonia as N, Outfall 001**

Monitoring Period End Date	Wastewater Flow (MGD)	Average Daily Concentration (mg/L)	Calculated Average Quantity (lb/day)	NPDES Monthly Average Permit Limit (lb/day)
31-Jan-13	2.17	1.13	20.5	163



**Table 3-44. John Morrell’s Sioux Falls Facility’s 2013 DMR Discharges for Ammonia as N, Outfall 001**

Monitoring Period End Date	Wastewater Flow (MGD)	Average Daily Concentration (mg/L)	Calculated Average Quantity (lb/day)	NPDES Monthly Average Permit Limit (lb/day)
28-Feb-13	2.19	1.05	19.2	163
31-Mar-13	2.14	0.91	16.3	163
30-Apr-13	2.16	0.94	16.9	70
31-May-13	2.17	0.86	15.6	70
30-Jun-13	2.29	0.88	16.8	58
31-Jul-13	2.14	0.72	12.9	58
31-Aug-13	2.33	0.67	13.0	58
30-Sep-13	2.26	0.72	13.6	75
31-Oct-13	2.03	0.80	13.6	75
30-Nov-13	2.14	0.77	13.8	163
31-Dec-13	2.02	1.12	18.9	163

Source: DMR Loading Tool; SD DENR, 2000b for permit limits

Note: Rounding of calculated limits may mean actual monitoring period loads vary slightly.

### ***Pilgrim’s Pride Corp. (Mount Pleasant, TX)***

Pilgrim’s Pride Corp – Mt Pleasant Complex, in Mount Pleasant, TX, is a poultry first processing plant covered by 40 CFR Part 432, Subcategory K. EPA previously reviewed this facility as part of the 2011 and 2012 Annual Review Reports (U.S. EPA, 2012 and 2014a). The facility’s permit, which was recently under a major amendment change since the 2012 Annual Review, includes limits for total nitrogen and seasonal limits for ammonia as N. According to the facility permit, the facility discharges treated process wastewater via outfall 001. The process wastewater is treated by primary and secondary screening for solids removal, flow equalization, dissolved air flotation with chemical addition, biotower treatment, two activated sludge aeration basins, two final clarifiers, sand filtration, chlorination, and dechlorination (TCEQ, 2015).

The total nitrogen permit limits are based on 40 CFR Part 432 and are 103 mg/L monthly average, 147 mg/L daily maximum. The ammonia as N permit limits are based on water quality criteria and equal to 40 CFR Part 432. They are (TCEQ, 2015):

- *Winter:* 4.0 mg/L monthly average, 8.0 mg/L daily maximum.
- *Summer:* 1.0 mg/L monthly average, 2.0 mg/L daily maximum.

### ***Tyson Farms, Inc. (Carthage, MS)***

Tyson Farms, Inc., Carthage Processing Plant in Carthage, MS, is a poultry first processor covered by 40 CFR Part 432, Subcategory K. The facility discharges treated process and sanitary wastewater, as well as non-contact cooling water, from outfall 001 into Cobbs Creek via Pickens Branch (MDEQ, 2010a). The facility’s treatment process includes screens, anaerobic lagoons, activated sludge, sedimentation, disinfection, and dechlorination (MDEQ, 2010b).

The total nitrogen permit limits are based on 40 CFR Part 432 and are 103 mg/L monthly average, 147 mg/L daily maximum. The ammonia as N permit limits are not seasonally based and are 2.0 mg/L monthly average, 3.0 mg/L daily maximum (MDEQ, 2010a).

### Nitrate Compounds Discharge Summary

EPA has determined the following for the top 2013 TRI nitrate compound dischargers:

- The total TRI nitrate compound TWPE decreased from 2009 to 2013; however, for seven of the top fifteen facilities the TRI nitrate compound TWPE increased during this period. Further five of the top seven facilities reported an increase of 20 percent or more, as shown in Table 3-42. As Table 3-45 shows, three of the five facility permits further reviewed as part of the 2015 Annual Review are in compliance with 40 CFR Part 432 total nitrogen limitations. One permit is currently under revision and is expected to include total nitrogen limits. EPA determined that one facility (Cargill Meat Solutions, in Schuyler, NE), while likely captured in the applicability of 40 CFR Part 432, Subcategory B, does not include total nitrogen limits (the ELGs specify total nitrogen limits). The ammonia as N limits included in this facility's permit are more stringent than 40 CFR Part 432 for ammonia.

**Table 3-45. Findings for Select 2013 TRI Nitrate Compound Dischargers**

Facility Name	State	Subpart	Date Permit Issued	40 CFR Part 432 Total Nitrogen Max Daily (mg/L)	40 CFR Part 432 Total Nitrogen Max Monthly Average (mg/L)	EPA Findings
Cargill Meat Solutions	NE	B	October 2009	NA	NA	Permit limits are more stringent than 40 CFR Part 432 for ammonia; however, permit does not include total nitrogen limits.
Cargill Meat Solutions	IA	ND	May 2009	194	134	Permit limits based on 40 CFR Part 432 total nitrogen and ammonia limitations.
John Morrell & Co.	SD	ND	April 2000	NA	NA	Facility is operating under an administratively continued permit, which is currently under revision. ELGs were not incorporated into existing permit since it was issued prior to the effective date of the ELG.
Pilgrim's Pride Corp.	TX	K	June 2015	147	103	Total nitrogen permit limits based on 40 CFR Part 432 limitations. Ammonia permit limits based on water quality criteria equal to 40 CFR Part 432 limitations.
Tyson's Farm, Inc.	MS	K	December 2010	147	103	Permit limits based on 40 CFR Part 432 total nitrogen limitations.

Sources: IA DNR, 2009; NE DEQ, 2009; SD DEQ, 2000b; TCEQ, 2015; and MDEQ, 2010a.

NA = Not applicable

ND = Not determined

### 3.6.4 Meat and Poultry Category Hydrogen Sulfide Releases in TRI

EPA's investigation of the hydrogen sulfide releases revealed that four facilities account for 93 percent of the 2013 TRI hydrogen sulfide releases (shown in Table 3-46). EPA did not investigate the remaining facilities discharging hydrogen sulfide as part of the 2015 Annual Review.

**Table 3-46. Top Facilities Reporting 2013 TRI Hydrogen Sulfide Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
Tyson Fresh Meats, Inc.	Hillsdale, IL	5,320	14,900	39.5%
Tyson Fresh Meats, Inc.	Lexington, NE	3,350	9,380	24.9%
Tyson Fresh Meats, Inc.	Columbus Junction, IA	2,220	6,220	16.5%
John Morrell & Co.	Sioux Falls, SD	1,600	4,490	11.9%
All other hydrogen sulfide releases in the Meat and Poultry Category <sup>a</sup>		986	2,760	7.3%
<b>Total</b>		<b>13,500</b>	<b>37,700</b>	<b>100%</b>

Source: *TRILTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Seven additional facilities reported hydrogen sulfide releases in the 2013 TRI.

Hydrogen sulfide discharges from meat and poultry facilities result from the anaerobic treatment of process wastewater. Anaerobic treatment is advantageous for treating wastewater from meat and poultry facilities because it requires low levels of energy to digest the high concentration of organic solid fractions of animal by-products from slaughterhouse facilities. Anaerobic lagoons are a common form of wastewater treatment. The degradation of the organic material typically emits methane and carbon dioxide; ammonium and hydrogen sulfide are also produced in trace amounts. The pH of the wastewater determines the composition of air emissions; for example, a pH lower than 6 produces more hydrogen sulfide and carbon dioxide emissions. Covering the lagoons improves heat retention, though a layer of scum typically forms on the lagoon surface, even if uncovered, which also reduces heat loss and emissions of malodorous compounds, such as hydrogen sulfide (U.S. EPA, 2002). The Meat and Poultry ELGs do not include limitations and standards for hydrogen sulfide.

Aerobic treatment of process wastewater can also result in hydrogen sulfide emissions. Facultative lagoons combine aerobic and anaerobic degradation, providing an aerobic upper layer and an anaerobic bottom layer, which digests the settleable solids in the wastewater. Though sulfides are created within the anaerobic layer, these emissions are typically oxidized before releasing into the atmosphere (U.S. EPA, 2002).

As discussed in Section 2.2.2.1 and Section 3.3 of this report, EPA announced that it was lifting the 1994 Administrative Stay of the reporting requirements for hydrogen sulfide on October 17, 2011 (76 FR 64022). Facilities were required to report environmental releases of hydrogen sulfide to TRI beginning with the reporting year 2012, including releases to water. EPA did not perform a TRA in 2014; therefore, EPA is reviewing hydrogen sulfide discharges

for the first time as part of the 2015 Annual Review. EPA is focusing on hydrogen sulfide releases reported by direct dischargers in the 2013 TRI.

As part of the 2015 Annual Review, EPA contacted the four facilities presented in Table 3-46 to determine how they are calculating hydrogen sulfide releases. Because only two parent companies own the four facilities in Table 3-46, EPA summarized the findings by parent company in the following sub-sections.

#### ***Tyson Fresh Meats, Inc.***

The facilities located in Hillsdale, IL, Lexington, NE, and Columbus Junction, IA, are all direct dischargers and employ different wastewater treatment techniques, as summarized in Table 3-47. The Hillsdale and Lexington facilities are complex beef slaughterhouses (IL EPA, 2011; NE DEQ, 2010). The facility in Columbus Junction is a complex hog slaughterhouse (Heeb, 2015). The company contact stated that hydrogen sulfide concentrations are generally similar between facilities (Dirks, 2014).

**Table 3-47. Wastewater Treatment Steps at Various Tyson Fresh Meats, Inc. Facilities**

Wastewater Treatment Steps	Hillsdale, IL	Columbus Junction, IA	Lexington, NE
Anaerobic lagoon (covered)	X		X
Anaerobic lagoon (uncovered)		X	
Biogas handling	X		X
Anoxic process	X		X
Aeration process	X	X	X
Secondary clarification	X	X	X
Chlorination	X	X	X
Dechlorination	X	X	X
Discharge to stream	X	X	X

Source: Dirks, 2014.

The three facilities have similar procedures for estimating their hydrogen sulfide releases. The facilities use limited samples of soluble sulfide and pH, in addition to known proportions of hydrogen sulfide and hydrosulfide ion in dissolved sulfide (assuming a neutral solution), to convert this sulfide concentration into hydrogen sulfide. The amount of hydrogen sulfide, in pounds, is estimated using a conversion based on the wastewater flow and calculated hydrogen sulfide concentration. The TRI reported releases are not a result of direct sampling of hydrogen sulfide at any of the three facilities (Dirks, 2014).

In an effort to further understand the reported releases of hydrogen sulfide to TRI, EPA reviewed available DMR data for the Hillsdale and Lexington facilities, however, neither facility’s permit limits or requires monitoring for hydrogen sulfide. The Columbus Junction facility permit is still under review due to a Use Attainability Analysis (UAA) concerning the receiving stream, therefore, the facility only has TRI data available (Heeb, 2015).

### ***John Morrell & Co.***

John Morrell & Company's facility in Sioux Falls, SD, reported direct releases of hydrogen sulfide to TRI in 2013 based on published emission factors (i.e., basis of estimate code E1). As part of the 2015 Annual Review, EPA contacted the facility and confirmed that the TRI hydrogen sulfide releases are estimated from treatment processes at the facility based on calculations using collection efficiencies and emission factors developed at the facility (Schulz, 2014). Therefore, the TRI reported releases are not a result of direct sampling. EPA reviewed available DMR data for this facility and determined that the facility's discharge permit does not limit or require monitoring of hydrogen sulfide.

### ***Hydrogen Sulfide Discharge Summary***

Based on company contacts, EPA determined that three facilities estimated their hydrogen sulfide releases reported to TRI based on soluble sulfide sampling data. The company contact for these facilities stated that this approach likely accurately represents potential releases to surface waters as reported to TRI. A fourth facility reviewed used emission factors to estimate their reported hydrogen sulfide releases. These four facilities account for 93 percent of the hydrogen sulfide releases reported to TRI in 2013.

### ***3.6.5 Meat and Poultry Category Findings***

The estimated toxicity of the Meat and Poultry Category discharges resulted primarily from nitrate compound and hydrogen sulfide releases reported to TRI. From the 2015 Annual Review, EPA found:

- ***Nitrate.*** Fifteen meat and poultry facilities account for the majority of TRI nitrate compound releases. EPA previously reviewed many of these in recent annual reviews. For the 2015 Annual Review, EPA focused its review on five facilities whose nitrate compound TWPE increased from 2009 to 2013. Three of these facility permits are in compliance with current total nitrogen ELGs. One permit is currently under revision and is expected to include total nitrogen limitations specified in the ELGs. EPA determined that one facility is likely captured in the applicability of 40 CFR Part 432, Subcategory B; however, the permit does not include total nitrogen limitations. The ammonia as N limitations included in this facility's permit are more stringent than local water quality criteria.
- ***Hydrogen Sulfide.*** Four facilities accounted for the majority of the hydrogen sulfide releases. All four facilities reported direct releases of hydrogen sulfide to TRI. Three of the four facilities are estimating their hydrogen sulfide releases by using soluble sulfide sampling data collected at the facilities. A company contact for three of the facilities believes that the direct releases of hydrogen sulfide they report to TRI accurately represent potential releases to receiving waters. EPA determined that the other facility is using published emission factors, and not direct wastewater sampling, to estimate hydrogen sulfide releases. EPA is uncertain as to how representative the data are of actual releases.

### **3.6.6 Meat and Poultry Category References**

1. Dirks, Kim & Christopher Logue. 2014. Telephone and Email Communication between Kim Dirks, Tyson Fresh Meats, Inc., Christopher Logue, Tyson Fresh Meats, Inc., and Kimberly Bartell, Eastern Research Group, Inc., Re: TRI Clarification for Hydrogen Sulfide Discharges. (December 22). EPA-HQ-OW-2015-0665. DCN 08152.
2. ERG. 2015. Preliminary Category Review – Facility Data Review for Point Source Category – 432 – Meat and Poultry. (September). EPA-HQ-OW-2015-0665. DCN 08153.
3. Ewoldt, Cay. 2012. Telephone and Email Communication Between Cay Ewoldt, NPDES Permits and Compliance Unit, NE DEQ, and Kimberly Landick, Eastern Research Group, Inc., Re: Meat and Poultry Facility Nitrogen Discharges. (January 25). EPA-HQ-OW-2010-0824-0250.
4. Heeb, Wendy. 2015. Telephone Communication Between Wendy Heeb, Iowa Department of Natural Resources, and Kara Edquist, Eastern Research Group, Inc., Re: Obtaining Tyson Fresh Meats, Columbus Junction, IA permit. (June 8). EPA-HQ-OW-2015-0665. DCN 08154.
5. IL EPA. 2011. Illinois Environmental Protection Agency. Public Notice of Facility Permit for NPDES Permit: Tyson Fresh Meats, Inc., Hillsdale, IL (IL0003913). (June 3). EPA-HQ-OW2010-0824-0248.
6. IA DNR. 2009. Iowa Department of Natural Resources. NPDES Permit: Cargill Meat Solutions Corporation, Ottumwa, IA (IA0060569). (May 6). EPA-HQ-OW-2015-0665. DCN 08155.
7. MDEQ. 2010a. Mississippi Department of Environmental Quality. NPDES Permit: Tyson Food, Inc., Carthage, MS (MS0026140). (December 6). EPA-HQ-OW-2015-0665. DCN 08157.
8. MDEQ. 2010b. Mississippi Department of Environmental Quality. Permit Rationale for Reissuance for NPDES Permit: Tyson Foods, Inc., Carthage, MS (MS0026140). (September 29). EPA-HQ-OW-2015-0665. DCN 08156.
9. NE DEQ. 2009. Nebraska Department of Environmental Quality. NPDES Permit and Fact Sheet: Cargill Meat Solutions Corp., Schuyler, NE (NE0000795). (October 1). EPA-HQ-OW-2010-0824-0242.
10. NE DEQ. 2010. Nebraska Department of Environmental Quality. NPDES Permit and Fact Sheet: Tyson Fresh Meats, Inc., Lexington, NE (NE0123501). (October 1). EPA-HQ-OW-2010-0824-0241.
11. Schulz, Charles. 2014. Telephone Communication between Charles Schulz, John Morrell & Co., and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 TRI

Hydrogen Sulfide Discharges for John Morrell & Co. (December 22). EPA-HQ-OW-2015-0665. DCN 08158.

12. SD DENR. 2000a. South Dakota Department of Environment and Natural Resources. NPDES Permit: John Morell and Company, Sioux Falls, SD (SD0000078). (April 1). EPA-HQ-OW-2015-0665. DCN 08159.
13. SD DENR. 2000b. South Dakota Department of Environment and Natural Resources. Addendum for NPDES Permit: John Morell and Company, Sioux Falls, SD (SD0000078). (July 5). EPA-HQ-OW-2015-0665. DCN 08160.
14. TCEQ. 2015. Texas Commission on Environmental Quality. Notice of Application and Preliminary Decision for Water Quality TPDES Permit Amendment for Industrial Wastewater for NPDES Permit: Pilgrim's Pride Corp., Mount Pleasant, TX (TX0062936). (June). EPA-HQ-OW-2015-0665. DCN 08161.
15. U.S. EPA. 2002. *Development Document for the Proposed Effluent Limitations Guidelines and Standards for the Meat and Poultry Products Industry Point Source Category*. Washington, D.C. (January). EPA-821-B-01-007. EPA-HQ-OW-2010-0824-0233.
16. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.
17. U.S. EPA. 2014a. *The 2012 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-004. EPA-HQ-OW-2010-0824-0320.
18. U.S. EPA. 2014b. *The 2013 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-003. EPA-HQ-OW-2014-0170-0077.
19. U.S. EPA. 2016. *Preliminary 2016 Effluent Guidelines Program Plan*. Washington, D.C. (June). EPA-821-R-16-001. EPA-HQ-OW-2015-0665. DCN 08208.

### 3.7 Mineral Mining and Processing (40 CFR Part 436)

EPA identified the Mineral Mining and Processing (Mineral Mining) Category for preliminary review because it ranks high again, in terms of toxic-weighted pound equivalents (TWPE), in the final 2015 combined point source category rankings. Previously, EPA reviewed discharges from this category as part of the 2004, 2010, and 2011 Annual Reviews in which it also ranked high (U.S. EPA, 2004, 2011, 2012). This section summarizes the results of the 2015 Annual Review. EPA focused its 2015 review on discharges of chloride, aluminum, and fluoride because of their high TWPE relative to the other pollutants discharged by facilities in the Mineral Mining Category. Fluoride, reviewed as part of the 2010 and 2011 Annual Reviews, continued to be a top pollutant of concern. For the 2015 Annual Review, available discharge data also showed significant contributions of chloride and aluminum.

#### 3.7.1 Mineral Mining Category 2015 Toxicity Rankings Analysis

Table 3-48 compares the toxicity rankings analyses (TRA) data for the Mineral Mining Category from the 2011, 2013, and 2015 Annual Reviews. EPA did not conduct the TRA in 2012 or 2014, but instead reviewed additional data sources as part of the even-year annual review, as described in Section 2.2.1 of EPA’s Preliminary 2016 Plan (U.S. EPA, 2016). During the 2015 Annual Review, EPA did not identify any data corrections to the 2013 Discharge Monitoring Report (DMR) and Toxic Release Inventory (TRI) discharge data for the Mineral Mining Category.

**Table 3-48. Mineral Mining Category TRI and DMR Facility Counts and Discharges Reported in 2009, 2011, and 2013**

Year of Discharge	Year of Review	Mineral Mining Category Facility Counts <sup>a</sup>			Mineral Mining Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities	TRI TWPE <sup>b</sup>	DMR TWPE <sup>c</sup>	Total TWPE
2009	2011	91	26	113	5,430	44,700 <sup>d</sup>	50,100 <sup>d</sup>
2011	2013	82	20	127	2,950	31,200	34,100
2013	2015	81	9	76	4,710	139,000	144,000

Sources: *TRIRelases2009\_v2*, *DMRLoads2009\_v2*, and 2011 Annual Review Report (for 2009 DMR and TRI data) (U.S. EPA, 2012); *DMRLTOutput2011\_v1* (for 2011 DMR); *TRILTOutput2011\_v1* (for 2011 TRI); *DMRLTOutput2013\_v1* (for 2013 DMR); *TRILTOutput2013\_v1* (for 2013 TRI)

Note: EPA did not evaluate 2010 or 2012 DMR and TRI data.

Note: TWPE values are rounded to three significant figures. Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Number of facilities with TWPE greater than zero.

<sup>b</sup> Releases include direct releases to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.

<sup>c</sup> Includes DMR data from both major and minor dischargers.

<sup>d</sup> 2009 data after corrections were made during the 2011 Annual Review.

As shown in Table 3-48, the DMR and total TWPE decreased from 2009 to 2011 and increased significantly from 2011 to 2013. The number of TRI facilities decreased from 2009 to 2013, while the total number of DMR facilities increased slightly from 2009 to 2011 but then



decreased substantially from 2011 to 2013. The increase in TWPE from 2011 to 2013 is primarily due to discharges from the facilities described in the sections below. The decrease in the number of facilities from 2011 to 2013 is due to decreases in minor facilities in two states, Colorado and Ohio (DMR Loading Tool).

### 3.7.2 Mineral Mining Category Pollutants of Concern

EPA’s 2015 review of the Mineral Mining Category focused on the 2013 DMR discharges because the DMR data dominate the category’s combined TWPE. Table 3-49 shows the five pollutants with the highest contribution to the 2013 DMR TWPE. As a point of comparison, Table 3-49 shows the 2011 DMR facility count and TWPE for these top five pollutants, based on the 2013 Annual Review (U.S. EPA, 2014).

Chloride, aluminum, and fluoride contribute more than 81 percent of the total 2013 DMR TWPE. Of these top pollutants, only fluoride is a regulated pollutant in the Mineral Mining Category effluent limitations guidelines and standards (ELGs) (40 CFR Part 436). EPA’s investigations of reported discharges of the top three pollutants are presented in Sections 3.7.3 and 3.7.4. EPA did not investigate the other pollutants, including iron and cyanide, as part of the 2015 Annual Review, because they represent a small percentage (11 percent) of the 2013 DMR TWPE for the Mineral Mining Category.

**Table 3-49. Mineral Mining Category Top DMR Pollutants**

Pollutant <sup>b</sup>	2013 DMR Data <sup>a</sup>		2011 DMR Data <sup>a</sup>	
	Number of Facilities Reporting Pollutant <sup>c</sup>	TWPE	Number of Facilities Reporting Pollutant <sup>c</sup>	TWPE
Chloride	21	45,900	25	8,990
Aluminum	12	45,200	15	3,080
Fluoride	13	21,700	14	11,500
Iron	17	8,150	36	580
Cyanide	4	7,670	6	523
<b>Top Pollutant Total</b>	<b>NA</b>	<b>129,000</b>	<b>NA</b>	<b>24,700</b>
<b>Mineral Mining Category Total</b>	<b>85</b>	<b>139,000</b>	<b>147</b>	<b>31,200</b>

Sources: *DMRLTOutput2013\_v1* (for 2013 TWPE); *DMRLTOutput2011\_v1* (for 2011 TWPE).

NA: Not applicable.

<sup>a</sup> Includes DMR data from both major and minor dischargers.

<sup>b</sup> Iron and cyanide discharges combined contribute 11 percent of the 2013 category DMR TWPE. Therefore, EPA did not review iron or cyanide discharges as part of the 2015 Annual Review.

<sup>c</sup> Number of facilities with TWPE greater than zero.

### 3.7.3 Mineral Mining Category Chloride and Aluminum Discharges in DMR

EPA’s investigation of chloride discharges revealed that two facilities, SES Assets LLC (formerly Lambert Dock) in Belmont, WV, and Cedar Lake Plant in Seagraves, TX, account for 96 percent of the 2013 DMR chloride discharges (shown in Table 3-50). In addition, EPA’s investigation of the aluminum discharges revealed that SES Assets LLC in Belmont, WV, also accounts for 95 percent of the 2013 DMR aluminum discharges (shown in Table 3-51). Because

SES Assets accounts for the majority of both the chloride and aluminum discharges, these discharges are reviewed together in this section. EPA did not investigate the remaining facilities discharging chloride or aluminum as part of the 2015 Annual Review.

**Table 3-50. Top 2013 DMR Chloride Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
SES Assets LLC (formerly Lambert Dock)	Belmont, WV	1,380,000,000	33,600	73%
Cedar Lake Plant	Seagraves, TX	429,000,000	10,400	23%
All other chloride dischargers in the Mineral Mining Category <sup>a</sup>		75,900,000	1,850	4%
<b>Total</b>		<b>1,880,000,000</b>	<b>45,900</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 19 additional facilities submitted chloride discharges in the 2013 DMR data.

**Table 3-51. Top 2013 DMR Aluminum Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
SES Assets LLC (formerly Lambert Dock)	Belmont, WV	717,000	43,000	95%
All other aluminum dischargers in the Mineral Mining Category <sup>a</sup>		36,100	2,160	5%
<b>Total</b>		<b>753,000</b>	<b>45,200</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 11 additional facilities submitted aluminum discharges in the 2013 DMR data.

### ***SES Assets, LLC (Chloride and Aluminum Discharges)***

SES Assets LLC (formerly Lambert Dock), in Belmont, WV, discharges chloride and aluminum through three outfalls. SES is a sand and gravel hauling facility that has large salt piles on site. As part of the 2015 Annual Review, EPA contacted the facility about their chloride and aluminum discharges. The facility contact confirmed the 2013 chloride and aluminum discharges and explained that the discharges are from surface runoff from the large contaminated salt piles that SES Assets inherited from Lambert Trucking in 2010. The salt is stored onsite and sold to the West Virginia Department of Transportation for winter road use. The piles have been onsite since the 1970s and are located near outfall 002 and 003. Table 3-52 presents the 2011 through 2014 DMR chloride and aluminum discharges for SES Assets, LLC. After SES Assets acquired the facility in 2010, stricter reporting was enforced (Goble, 2014). Previously, before the acquisition, the facility did not submit consistent DMR data.

**Table 3-52. SES Assets, LLC Chloride and Aluminum Discharges for 2011 – 2014**

Year of Discharge	Chloride TWPE	Aluminum TWPE
2011	636	2,810
2012	44,200	20,600
2013	33,600	43,000
2014	2,500	1,390

Source: DMR Loading Tool

The facility contact indicated that over the last two years the company has implemented remediation efforts on site, such as salt storage pad berm repair and repair of outfalls 002 and 003 (Goble, 2014). This is reflected in the decreased chloride and aluminum TWPE from 2013 to 2014, shown in Table 3-52. However, the facility contact stated that the company is selling their remaining salt piles and does not plan to store salt on site in the future (Goble, 2014). EPA expects the discharges from this facility to decrease in future years.

#### ***Cedar Lake Plant (Chloride Discharges)***

Cedar Lake Plant, owned by Cooper Natural Resources Inc., in Seagraves, TX, discharges chloride through two outfalls, 001 and 003. The facility produces anhydrous sodium sulfate from brine extracted from Cedar Lake, a saline lake. Spent brine is returned to the lake via outfall 001, along with plant floor wash water, condensate from evaporation processes, and stormwater. Wastewater from pump house floor washdown, booster pump noncontact cooling water, stormwater, and occasional brine tank overflow are all discharged through outfall 002. EPA did not review DMR data from outfall 002 as part of this review because the outfall does not have chloride discharges. Cooling tower blowdown from the evaporation pond, intermittent brine tank overflow, stormwater runoff, culvert wash water, and tank washdown are discharged through outfall 003. Because the facility withdraws and discharges to Cedar Lake, 40 CFR 436.122(b) allows net limitations to be applied (TCEQ, 2009). Therefore, there are no reportable limits for TDS, chloride, or sulfate; rather the wastewater discharge may not fall below the quality of the water withdrawn (TCEQ, 2009).

Chloride is not a regulated pollutant in the Mineral Mining Category ELGs. Historical discharge data to support the no reportable limits in Cedar Lake's permit are provided in the Statement of Basis/Technical Summary for the facility (TCEQ, 2009). The facility's permit expired on December 1, 2014 and an updated permit and Statement of Basis/Technical Summary have been drafted (TCEQ, 2015). Table 3-53 presents the average monthly flow and chloride discharges for all three outfalls from 2004 through 2009 and 2009 through 2014 as presented in the Statement of Basis/Technical Summary documents (TCEQ, 2009 and TCEQ, 2015). EPA compared these discharges to the 2013 DMR average monthly discharges for outfalls 001 and 002 in Table 3-53 to show that they are consistent with those presented in the Statement of Basis/Technical Summary documents from TCEQ.

**Table 3-53. Cedar Lake Plant's Historical and 2013 DMR Monthly Chloride Discharges**

	Outfall 001		Outfall 002		Outfall 003	
	Flow (MGD)	Chloride Concentration (mg/L)	Flow (MGD)	Chloride Concentration (mg/L)	Flow (MGD)	Chloride Concentration (mg/L)
Average Monthly Discharge, 2004 – 2009						
2004-2009 Average of Daily Avg <sup>a</sup>	1.06	92,968	0.026	26,822	0.027	52,316
2004-2009 Maximum of Daily Max <sup>b</sup>	1.58	116,886	0.28	95,497	0.06	97,746
Average Monthly Effluent, 2009 – 2014						
2009-2014 Average of Daily Avg <sup>a</sup>	1.259	93,769	No discharge reported		0.148	66,857
2009-2014 Maximum of Daily Max <sup>b</sup>	1.575	166,000			1.305	211,000
Average Daily Discharge, 2013 DMR Data						
31-Jan-13	1.305	104,225	No discharge reported		0.012	68,450
28-Feb-13	1.305	95,050			0.012	78,300
31-Mar-13	1.305	98,400			0.011	87,900
30-Apr-13	1.305	89,160			0.1	70,367
31-May-13	1.305	104,950			0.015	77,250
30-Jun-13	1.27	91,950			0.022	44,800
31-Jul-13	1.305	127,400			0.007	30,850
31-Aug-13	1.305	104,175			0.013	54,275
30-Sep-13	1.305	120,175			0.012	93,067
31-Oct-13	1.305	109,733			0.012	57,233
30-Nov-13	1.305	128,800			0.005	130,000
31-Dec-13	1.305	110,750			0	0

Source: TCEQ, 2009; TCEQ, 2015; *DMRLTOutput2013\_v1*.

<sup>a</sup> Average of Daily Avg values are the average of all daily average values for the reporting period.

<sup>b</sup> Maximum of Daily Max values are the individual maximum values for the reporting period.

Table 3-53 shows that the 2013 DMR discharges are similar in magnitude to discharges used to determine the no reportable limit in the facility's permit. Additionally, as noted above, the facility withdraws and discharges to Cedar Lake allowing net limitations to be applied.

#### 3.7.4 Mineral Mining Category Fluoride Discharges in DMR

EPA's investigation of the fluoride discharges revealed that PCS Phosphate White Springs, in White Springs, FL, accounts for 69 percent of the 2013 DMR fluoride discharges (shown in Table 3-54). EPA did not investigate the remaining 12 facilities discharging fluoride as part of the 2015 Annual Review.

**Table 3-54. Top 2013 DMR Fluoride Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
PCS Phosphate White Springs	White Springs, FL	496,000	14,900	69%
All other fluoride dischargers in the Mineral Mining Category <sup>a</sup>		226,000	6,770	31%
<b>Total</b>		<b>722,000</b>	<b>21,700</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 12 additional facilities submitted fluoride discharges in the 2013 DMR data.

PCS Phosphate White Springs generates wastewater from open-pit mining of phosphate rock, beneficiation of the rock, manufacture of sulfuric acid and phosphoric acid, production of fertilizer components and animal-feed supplements, and stormwater runoff. The facility's treatment system includes pH adjustment and chemical precipitation using lime; settling and sedimentation; and adsorption/absorption on mining waste clay particles in clay settling areas (FL DEP, 2013).

PCS Phosphate White Springs discharges fluoride from outfalls 001, 002, 003, and 004. All four outfalls have a monthly average reporting requirement for fluoride and a daily maximum permit limit of 10 mg/L (FL DEP, 2013). Table 3-55 presents the average monthly flows and fluoride discharge concentrations for three outfalls in 2013; the facility reported no discharges from outfall 003 in 2013. There are multiple internal outfalls that feed into 001, so the facility samples at a point in Swift Creek where 001 discharges. None of the fluoride concentrations, shown in Table 3-55, exceed the daily maximum permit limit. As part of the 2015 Annual Review, EPA contacted the Florida Department of Environmental Protection (FL DEP), which confirmed the facility's 2013 fluoride discharges (FL DEP, 2015).

**Table 3-55. PCS Phosphate White Spring's 2013 DMR Monthly Average Fluoride Discharges**

Date	Outfall 001		Outfall 002		Outfall 004	
	Flow (MGD)	Fluoride Concentration (mg/L)	Flow (MGD)	Fluoride Concentration (mg/L)	Flow (MGD)	Fluoride Concentration (mg/L)
31-Jan-13	25.0	2.3	1.1	0.6	0.9	0.7
28-Feb-13	30.4	1.6	1.0	1.2	3.3	0.6
31-Mar-13	59.4	1.9	1.0	3.0	2.9	0.8
30-Apr-13	65.7	2.1	1.0	3.9	4.5	0.9
31-May-13	53.3	2.9	1.4	5.0	6.0	1.1
30-Jun-13	99.9	2.5	0.9	5.6	5.5	0.9
31-Jul-13	144	2.3	0.8	9.0	18.9	0.9
31-Aug-13	90.9	2.7	0.8	3.2	5.2	0.9
30-Sep-13	72.4	2.5	0.8	1.9	1.5	0.7
31-Oct-13	33.8	2.9	0.0	0.0	0.9	0.7

**Table 3-55. PCS Phosphate White Spring’s 2013 DMR Monthly Average Fluoride Discharges**

Date	Outfall 001		Outfall 002		Outfall 004	
	Flow (MGD)	Fluoride Concentration (mg/L)	Flow (MGD)	Fluoride Concentration (mg/L)	Flow (MGD)	Fluoride Concentration (mg/L)
30-Nov-13	25.4	3.0	0.0	0.0	1.8	1.0
31-Dec-13	52.2	3.2	0.8	1.1	4.2	1.1

Source: *DMRLTOutput2013\_v1*

Table 3-56 presents PCS Phosphate White Spring’s total fluoride discharges from 2011 through 2014. As shown, discharges have increased from 2011 to 2014, almost doubling between 2013 and 2014.

**Table 3-56. PCS Phosphate White Spring’s Fluoride Discharges for 2011 – 2014**

Year of Discharge	Fluoride TWPE
2011	5,570
2012	12,100
2013	14,900
2014	27,200

Source: DMR Loading Tool

### 3.7.5 Mineral Mining Category Findings

The estimated toxicity of the Mineral Mining Category discharges resulted primarily from chloride, aluminum, and fluoride discharges reported on DMRs. From the 2015 Annual Review, EPA found:

- **Chloride and Aluminum.** SES Assets, (formerly Lambert Dock) in Belmont, WV, and Cedar Lake Plant, in Seagraves, TX, account for 96 percent of the 2013 DMR chloride discharges. SES Assets also accounts for 95 percent of the 2013 DMR aluminum discharges.
  - SES Assets’ chloride and aluminum discharges can be attributed to the large salt piles the facility has on site. SES Assets has implemented remediation efforts, is selling its remaining salt piles, and does not plan to store salt on site in the future. For this reason, EPA does not consider these discharges to be representative of the Mineral Mining Category.
  - Cedar Lake Plant has net limitations because they withdraw from and discharge to the same saline body of water. Additionally, chloride concentrations have been consistent from 2004 through 2013. For these reasons, EPA does not consider these discharges to be representative of the Mineral Mining Category.
- **Fluoride.** One facility, PCS Phosphate White Springs in White Springs, FL, contributed 69 percent of the 2013 DMR fluoride discharges. The facility’s discharges have increased from 2011 to 2014.

### 3.7.6 Mineral Mining Category References

1. ERG. 2015. Preliminary Category Review – Facility Data Review for Point Source Category – 436 – Mineral Mining and Processing. (September). EPA-HQ-OW-2015-0665. DCN 08162.
2. FL DEP. 2013. Florida Department of Environmental Protection. NPDES Permit: PCS Phosphates White Springs, White Springs, FL (FL0000655). (March 18). EPA-HQ-OW-2015-0665. DCN 08163.
3. FL DEP. 2015. Telephone and Email Communication Between Tom Kallemeyn, Florida Department of Environmental Protection, and Kara Edquist, Eastern Research Group, Inc., Re: 2013 DMR Fluoride Discharges. (May 6). EPA-HQ-OW-2015-0665. DCN 08164.
4. Goble, Billey. 2014. Telephone and Email Communication Between Billey Goble, SES Services, and Diane Perkins, Cirrus Associates, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Aluminum, Chloride Discharges. (December 18). EPA-HQ-OW-2015-0665. DCN 08165.
5. TCEQ. 2009. Texas Commission on Environmental Quality. NPDES Permit Statement of Basis/Technical Summary: Cooper Natural Resources, Cedar Lake Plant, Seagraves, TX (TX0112038). (December 19). EPA-HQ-OW-2015-0665. DCN 08166.
6. TCEQ. 2015. Texas Commission on Environmental Quality. NPDES Permit Statement of Basis/Technical Summary: Cooper Natural Resources, Cedar Lake Plant, Seagraves, TX (TX0112038). (March 31). EPA-HQ-OW-2015-0665. DCN 08167.
7. U.S. EPA. 2004. *Technical Support Document for the 2004 Effluent Guidelines Program Plan*. Washington, D.C. (August). EPA-821-R-04-014. EPA-HQ-OW-2003-0074-1346 through 1352.
8. U.S. EPA. 2011. *Technical Support document for the 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-820-R-10-021. EPA-HQ-OW-2008-0517-0618.
9. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.
10. U.S. EPA. 2014. *Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans*. Washington, D.C. (September). EPA-820-R-14-001. EPA-HQ-OW-2014-0170-0002.
11. U.S. EPA. 2016. *Preliminary 2016 Effluent Guidelines Program Plan*. Washington, D.C. (June). EPA-821-R-16-001. EPA-HQ-OW-2015-0665. DCN 08208.

### 3.8 Nonferrous Metals Manufacturing (40 CFR Part 421)

EPA identified the Nonferrous Metals Manufacturing (NFMM) Category for preliminary review because it ranks high again, in terms of toxic-weighted pound equivalents (TWPE), in the final 2015 combined point source category rankings. Previously, EPA reviewed discharges from this category as part of the 2004, 2006, 2007, 2009, 2011, and 2013 Annual Reviews in which it also ranked high (U.S. EPA, 2004, 2006, 2007, 2009, 2012, 2014). This section summarizes the results of the 2015 Annual Review. EPA focused its 2015 review on discharges of cadmium and fluoride because of their high TWPE relative to the other pollutants discharged by facilities in the NFMM Category. Cadmium, reviewed as part of the 2013 Annual Review, continues to be a top pollutant of concern. For the 2015 Annual Review, available discharge data also showed significant contributions of fluoride.

#### 3.8.1 NFMM Category 2015 Toxicity Rankings Analysis

Table 3-57 compares the toxicity rankings analyses (TRA) data for the NFMM Category from the 2011, 2013, and 2015 Annual Reviews. EPA did not conduct the TRA in 2012 or 2014, but instead reviewed additional data sources as part of the even-year annual review, as described in Section 2.2.1 of EPA’s Preliminary 2016 Plan (U.S. EPA, 2016). During the 2015 Annual Review, EPA did not identify any data corrections to the 2013 Discharge Monitoring Report (DMR) and Toxic Release Inventory (TRI) discharge data for the NFMM Category.

**Table 3-57. NFMM Category TRI and DMR Facility Counts and Discharges Reported for 2009, 2011, and 2013**

Year of Discharge	Year of Review	NFMM Category Facility Counts <sup>a</sup>			NFMM Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities	TRI TWPE <sup>b</sup>	DMR TWPE <sup>c</sup>	Total TWPE
2009	2011	121	29	19	40,500	160,000 <sup>d</sup>	201,000 <sup>d</sup>
2011	2013	119	28	23	42,900	330,000 <sup>e</sup>	373,000 <sup>e</sup>
2013	2015	108	18	11	34,300	187,000	221,000

Sources: 2013 Annual Review Report (for 2009 and 2011 DMR and TRI data) (U.S. EPA, 2014); *DMRLTOOutput2013\_v1* (for 2013 DMR); *TRILTOOutput2013\_v1* (for 2013 TRI)

Note: EPA did not evaluate 2010 or 2012 DMR and TRI data.

Note: TWPE values are rounded to three significant figures. Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Number of facilities with TWPE greater than zero.

<sup>b</sup> Releases include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.

<sup>c</sup> Includes DMR data from both major and minor dischargers.

<sup>d</sup> 2009 data after corrections were made during the 2011 Annual Review.

<sup>e</sup> 2011 data after corrections were made during the 2013 Annual Review.

As shown in Table 3-57, the total TWPE increased from 2009 to 2011 and decreased from 2011 to 2013. Additionally, the number of TRI facilities decreased from 2009 to 2013, while the total number of DMR facilities increased from 2009 to 2011, then decreased significantly from 2011 to 2013.



### 3.8.2 NFMM Category Pollutants of Concern

EPA’s 2015 review of the NFMM Category focused on the 2013 DMR discharges because the DMR data dominate the category’s combined TWPE. Table 3-58 shows the five pollutants with the highest contribution to the 2013 DMR TWPE. As a point of comparison, Table 3-58 shows the 2011 DMR facility count and TWPE for these top five pollutants, based on the 2013 Annual Review (U.S. EPA, 2014).

Cadmium and fluoride contribute more than 78 percent of the total 2013 DMR TWPE. Cadmium and fluoride are regulated in the NFMM Category effluent limitations guidelines and standards (ELGs) (40 CFR Part 421). EPA’s investigations of reported discharges of these pollutants are presented in Section 3.8.3. EPA did not investigate the other pollutants, including zinc, lead, and aluminum, as part of the 2015 Annual Review, because they represent a small percentage (13 percent) of the 2013 DMR TWPE for the NFMM Category.

**Table 3-58. 2013 NFMM Category Top DMR Pollutants**

Pollutant <sup>b</sup>	2013 DMR Data <sup>a</sup>		2011 DMR Data <sup>a</sup>	
	Number of Facilities Reporting Pollutant <sup>c</sup>	TWPE	Number of Facilities Reporting Pollutant <sup>c</sup>	TWPE <sup>d</sup>
Cadmium	4	104,000	9	114,000
Fluoride	15	41,100	18	18,100
Zinc	17	8,990	29	9,910
Lead	11	8,420	20	19,400
Aluminum	16	7,680	22	12,400
<b>Top Pollutant Total</b>	<b>NA</b>	<b>170,000</b>	<b>NA</b>	<b>174,000</b>
<b>NFMM Category Total</b>	<b>29</b>	<b>187,000</b>	<b>51</b>	<b>330,000</b>

Sources: *DMRLTOutput2013\_v1* (for 2013 TWPE); *DMRLTOutput2011\_v1* (for 2011 TWPE)

Note: Sums of individual values may not equal the total presented, due to rounding.

NA: Not applicable.

<sup>a</sup> Includes DMR data from both major and minor dischargers.

<sup>b</sup> Zinc, lead, and aluminum discharges combined contribute 13 percent of the 2013 category DMR TWPE. Therefore, EPA did not review zinc, lead, or aluminum discharges as part of the 2015 Annual Review.

<sup>c</sup> Number of facilities with TWPE greater than zero.

<sup>d</sup> 2011 data after corrections were made during the 2013 Annual Review.

### 3.8.3 NFMM Cadmium and Fluoride Discharges in DMR

EPA’s investigation of the cadmium discharges revealed that one facility, Nyrstar Clarksville, Inc. (Nyrstar), in Clarksville, TN, accounts for over 99 percent of the 2013 DMR cadmium discharges (shown in Table 3-59). In addition, EPA’s investigation of the fluoride discharges revealed that two facilities, Nyrstar, in Clarksville, TN, and Horsehead Corp. in Monaca, PA, account for 87 percent of the 2013 DMR fluoride discharges (shown in Table 3-60). Because Nyrstar accounts for the majority of both the cadmium and fluoride discharges, these discharges are reviewed together in this section. EPA did not investigate the remaining facilities discharging cadmium or fluoride as part of the 2015 Annual Review.

**Table 3-59. Top 2013 DMR Cadmium Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
Nyrstar Clarksville, Inc.	Clarksville, TN	4,480	103,000	99.4%
All other cadmium dischargers in the NFMM Category <sup>a</sup>		28.6	661	0.6%
<b>Total</b>		<b>4,510</b>	<b>104,000</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Three additional facilities submitted cadmium discharges in the 2013 DMR data.

**Table 3-60. Top 2013 DMR Fluoride Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
Nyrstar Clarksville, Inc.	Clarksville, TN	691,000	20,700	50%
Horsehead Corp.	Monaca, PA	508,000	15,200	37%
All other fluoride dischargers in the NFMM Category <sup>a</sup>		175,000	5,240	13%
<b>Total</b>		<b>1,370,000</b>	<b>41,200</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 13 additional facilities submitted fluoride discharges in the 2013 DMR data.

### ***Nyrstar Clarksville, Inc. (Cadmium and Fluoride Discharges)***

Nyrstar in Clarksville, TN, produces zinc metal from beneficiation of zinc concentrate ore by a hydrometallurgical process. As secondary products, this facility also produces cadmium metal, sulfuric acid, and metallurgically valuable byproducts (TN DEC, 2005). EPA reviewed the facility's cadmium discharges as part of the 2011 and 2013 Annual Reviews (U.S. EPA, 2012, 2014). Nyrstar discharges cadmium from outfalls 001, SW3, SW4, and SW5, and fluoride from outfall 001. Outfall 001 discharges treated process wastewater, sanitary wastewater, stormwater, and cooling water (TN DEC, 2011). Outfalls SW3, SW4, and SW5 discharge stormwater runoff from the main production area, materials handling areas, and ancillary facility areas, respectively (Crocker, 2013).

Nyrstar was issued a new permit, which took effect January 2012. The permit set a monthly average cadmium limit of 2.28 pounds per day (lb/day) (1.03 kilograms per day (kg/day)), a daily maximum cadmium limit of 5.29 lb/day (2.4 kg/day), and a fluoride limit of report only for outfall 001. Additionally, the permit set a daily maximum cadmium benchmark

concentration<sup>25</sup> of 0.0159 milligrams per liter (mg/L) for outfalls SW3, SW4, and SW5, with a quarterly monitoring requirement (TN DEC, 2011).

Table 3-61 presents Nyrstar's 2013 cadmium concentrations, along with the average daily flow per month for the four outfalls. As shown in Table 3-61, 2013 cadmium loads for outfall 001 are below the facility's permit limits. However, 2013 cadmium discharges for outfalls SW3, SW4, and SW5 exceed the daily maximum benchmark concentration set in the facility permit.

**Table 3-61. Nyrstar's 2013 DMR Monthly Cadmium Discharges**

Outfall	Date	Flow (MGD)	Quantity (kg/day)	Concentration (mg/L)	NPDES Monthly Average Permit Limit <sup>a</sup>
001	31-Jan-13	0.610	0.503	NR	1.03 kg/day
001	28-Feb-13	0.660	0.370	NR	1.03 kg/day
001	31-Mar-13	0.605	0.610	NR	1.03 kg/day
001	30-Apr-13	0.680	0.660	NR	1.03 kg/day
001	31-May-13	0.720	0.707	NR	1.03 kg/day
001	30-Jun-13	0.590	0.340	NR	1.03 kg/day
001	31-Jul-13	0.630	0.260	NR	1.03 kg/day
001	31-Aug-13	0.830	0.770	NR	1.03 kg/day
001	30-Sep-13	0.690	0.270	NR	1.03 kg/day
001	31-Oct-13	0.710	0.410	NR	1.03 kg/day
001	30-Nov-13	0.590	0.370	NR	1.03 kg/day
001	31-Dec-13	0.750	0.707	NR	1.03 kg/day
SW3	31-Mar-13	0.130	NR	8.00 <sup>b</sup>	0.0159 mg/L
SW3	30-Jun-13	0.260	NR	2.46 <sup>b</sup>	0.0159 mg/L
SW3	30-Sept-13	0.710	NR	3.71 <sup>b</sup>	0.0159 mg/L
SW3	31-Dec-13	0.120	NR	4.27 <sup>b</sup>	0.0159 mg/L
SW4	31-Mar-13	0.099	NR	0.110 <sup>b</sup>	0.0159 mg/L
SW4	30-Jun-13	0.140	NR	0.025 <sup>b</sup>	0.0159 mg/L
SW4	30-Sept-13	0.380	NR	0.280 <sup>b</sup>	0.0159 mg/L
SW4	31-Dec-13	0.098	NR	0.220 <sup>b</sup>	0.0159 mg/L
SW5	31-Mar-13	0.850	NR	0.025 <sup>b</sup>	0.0159 mg/L
SW5	30-Jun-13	1.30	NR	0.025 <sup>b</sup>	0.0159 mg/L
SW5	30-Sept-13	3.31	NR	0.050 <sup>b</sup>	0.0159 mg/L
SW5	31-Dec-13	0.850	NR	0.025 <sup>b</sup>	0.0159 mg/L

Sources: *DMRLOutput2013\_v1*; TN DEC, 2011

NR: Not Reported

<sup>a</sup> EPA converted the facility's cadmium permit limits for outfall 001 to kg/day to match the units of the reported mass discharge loads; the permit lists the limit in lb/day. Additionally, the 0.0159 mg/L value, shown as the NPDES monthly average permit limit for outfalls SW3, SW4, and SW5, are benchmark concentrations, not effluent limitations.

<sup>b</sup> Cadmium concentration exceeds daily maximum benchmark concentration.

Table 3-62 presents Nyrstar's 2013 fluoride concentrations, along with the average daily flow per month for outfall 001. Because the facility reported fluoride quantities in kg/day for

<sup>25</sup> Benchmark/cutoff values are not effluent limitations. Outfalls SW3, SW4, and SW5 discharge stormwater runoff; therefore, benchmark/cutoff concentrations are listed in the facility's permit to evaluate the effectiveness of their stormwater best management practices (BMPs). If the facility discharge exceeds the benchmark concentration, the facility is required to complete investigations to determine the reason(s) the higher value(s) occurred and make BMP improvements, as needed, for the relevant parameter (TN DEC, 2011).

outfall 001, EPA calculated the fluoride concentrations using the pollutant load discharged and the average monthly flow. The facility has a once-per-month monitoring requirement for fluoride in their permit for outfall 001; the permit does not include fluoride effluent limits (TN DEC, 2011). As shown in Table 3-62, the fluoride concentrations vary by three orders of magnitude depending on the month for outfall 001. As part of the 2015 Annual Review, EPA contacted Nyrstar about the fluoride discharges. The facility contact confirmed the reported 2013 flow rates and concentrations and explained that a fluoride sample is taken once-per-month which may not be indicative of the entire month and would only be valid for the 24-hour period that the composite sample was collected. Other parameters reported for outfall 001 are averages of multiple samples throughout the month (Crocker, 2014).

**Table 3-62. Nyrstar's 2013 DMR Monthly Fluoride Discharges for Outfall 001**

Date	Reported Flow (MGD)	Reported Quantity (kg/day)	Calculated Concentration (mg/L)
31-Jan-13	0.610	24.9	10.8
28-Feb-13	0.660	29.1	11.6
31-Mar-13	0.605	43.7	19.1
30-Apr-13	0.680	66.8	26.0
31-May-13	0.720	698	256
30-Jun-13	0.590	5.19	2.32
31-Jul-13	0.630	97.1	40.7
31-Aug-13	0.830	62.2	19.8
30-Sep-13	0.690	431	165
31-Oct-13	0.710	2,720	1,010
30-Nov-13	0.590	13.1	5.87
31-Dec-13	0.750	5,940	2,090

Source: *DMRLTOutput2013\_v1*

Table 3-63 presents Nyrstar's cadmium and fluoride DMR discharges for 2010 through 2014. EPA reviewed 2014 cadmium and fluoride discharges and confirmed that the discharges are not increasing; however, 2013 cadmium discharges exceed permit benchmark values for three of the four stormwater outfalls and 2013 fluoride concentrations vary by three orders of magnitude depending on the month.

**Table 3-63. Nyrstar DMR Cadmium and Fluoride Discharges for 2010 – 2014**

Year	Cadmium TWPE	Fluoride TWPE <sup>a</sup>
2010	99,700	NR
2011	112,000	NR
2012	166,000	783
2013	103,000	20,700
2014	103,000	6,700

Source: *DMRLTOutput2013\_v1*; DMR Loading Tool.

Note: TWPE values are rounded to three significant figures.

NR: Not Reported

<sup>a</sup> Nyrstar was issued a new permit in 2012 that added the requirement for fluoride monitoring of outfall 001. Prior to 2012, the facility did not monitor fluoride discharges.

### ***Horsehead Corporation (Fluoride Discharges)***

Horsehead Corporation owned and operated a zinc smelter and ancillary units to produce zinc metal, zinc oxide, zinc dust, zinc sulfate, and sulfuric acid, in Monaca, PA. The facility was a zinc smelter that is subject to 40 CFR Part 421 Subpart H (Primary Zinc Subcategory). Subpart H does not regulate fluoride discharges. EPA previously reviewed the facility’s fluoride discharges as part of the 2011 Annual Review; the facility contact confirmed the 2009 fluoride discharges and EPA recommended facility-specific permitting support to address the facility’s fluoride discharges (U.S. EPA, 2012).

According to the facility’s website, as of April 30, 2014, the operations in Monaca, PA were shut down. In May 2014, the facility started production of zinc metal at a new Mooresboro, NC location (Horsehead Corporation, 2014).<sup>26</sup> Table 3-64 presents Horsehead’s Monaca, PA fluoride discharges for 2010 through 2014. As shown, discharges significantly decreased in 2014, when the facility closed at the end of April.

**Table 3-64. Horsehead DMR Fluoride Discharges for 2010 – 2014**

<b>Year</b>	<b>Fluoride TWPE</b>
2010	15,600
2011	11,600
2012	13,000
2013	15,200
2014	2,300

Source: *DMRLTOutput2013\_v1*; DMR Loading Tool.

### ***3.8.4 NFMM Category Findings***

The estimated toxicity of the NFMM Category discharges resulted primarily from cadmium and fluoride discharges reported on DMRs. From the 2015 Annual Review, EPA found:

- One facility, Nyrstar Clarksville, Inc., in Clarksville, TN, accounted for over 99 percent of the 2013 DMR cadmium discharges and 50 percent of the 2013 DMR fluoride discharges. The facility’s 2013 cadmium discharges are above permit benchmark values for three of the four stormwater outfalls. The facility’s 2013 fluoride discharges vary by three orders of magnitude, depending on the month. The facility currently has reporting requirements for fluoride, but no specific limits.
- Horsehead Corporation in Monaca, PA, contributed 37 percent of the 2013 DMR fluoride discharges (note that Nyrstar Clarksville, Inc., discussed above, contributes 50 percent of the 2013 DMR fluoride discharges; the two facilities together account for 87 percent of the fluoride discharges). The facility closed in 2014.

### ***3.8.5 NFMM Category References***

1. Crocker, William. 2013. Telephone and Email Communication Between William Crocker, Nyrstar, and Julia Kolberg, Eastern Research Group, Inc., Re: 2011

<sup>26</sup> No 2014 DMR data were submitted for the new facility in Mooresboro, NC.

- DMR Cadmium and Lead Discharges. (December 11). EPA-HQ-OW-2014-0170-0024.
2. Crocker, William. 2014. Telephone and Email Communication Between William Crocker, Nyrstar, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Fluoride Discharges. (December 11). EPA-HQ-OW-2015-0665. DCN 08168.
  3. ERG. 2015. Preliminary Category Review – Facility Data Review for Point Source Category – 421 – NFMM. (September). EPA-HQ-OW-2015-0665. DCN 08169.
  4. Horsehead Corporation. 2014. Horsehead Corporation End Operations at Monaca, PA Facility. (May 5). EPA-HQ-OW-2015-0665. DCN 08170.
  5. TN DEC. 2005. Tennessee Department of Environment and Conservation. *NPDES Permit Fact Sheet: Nyrstar Clarksville, Inc., Clarksville, Tennessee*. (May 31). EPA-HQ-OW-2010-0824-0042.
  6. TN DEC. 2011. Tennessee Department of Environment and Conservation. *NPDES Permit: Nyrstar Clarksville, Inc., Clarksville, Tennessee*. (November 30). EPA-HQ-OW-2014-0170-0025.
  7. U.S. EPA. 2004. *Technical Support Document for the 2004 Effluent Guidelines Program Plan*. Washington, D.C. (August). EPA-821-R-04-014. EPA-HQ-OW-2003-0074-1346 through 1352.
  8. U.S. EPA. 2006. *Technical Support Document for the 2006 Effluent Guidelines Program Plan*. Washington, D.C. (December). EPA-821-R-06-018. EPA-HQ-OW-2004-0032-2782.
  9. U.S. EPA. 2007. *Technical Support Document for the Preliminary 2008 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-821-R-07-007. EPA-HQ-OW-2006-0771-0819.
  10. U.S. EPA. 2009. *Technical Support Document for the Preliminary 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-821-R-09-006. EPA-HQ-OW-2008-0517-0514.
  11. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.
  12. U.S. EPA. 2014. *The 2013 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-003. EPA-HQ-OW-2014-0170-0077.
  13. U.S. EPA. 2016. *Preliminary 2016 Effluent Guidelines Program Plan*. Washington, D.C. (June). EPA-821-R-16-001. EPA-HQ-OW-2015-0665. DCN 08208.

### **3.9     Ore Mining and Dressing (40 CFR Part 440)**

EPA identified the Ore Mining and Dressing (Ore Mining) Category for preliminary review because it ranks high again, in terms of toxic-weighted pound equivalents (TWPE), in the final 2015 combined point source category rankings. Previously, EPA reviewed discharges from this category as part of the 2009, 2010, 2011, and 2013 Annual Reviews in which it also ranked high (U.S. EPA, 2009, 2011a, 2012, 2014). In addition, EPA conducted a preliminary study of this category as part of the 2009 and 2010 Annual Reviews (U.S. EPA, 2011b). From the preliminary study, EPA found that a small percentage of active mines account for the majority of toxic weighted discharges; therefore, discharge issues are best addressed through permitting, compliance, and enforcement activities rather than revision of 40 CFR Part 440 (U.S. EPA, 2011b).

This section summarizes the results of the 2015 Annual Review. EPA focused its 2015 review on discharges of copper, selenium, radium-226, arsenic, lead and lead compounds, and silver and silver compounds because of their high TWPE relative to other pollutants discharged by facilities in the Ore Mining Category. Copper and arsenic, reviewed as part of the 2013 Annual Review, continue to be top pollutants of concern. For the 2015 Annual Review, available discharge data also showed significant contributions of selenium, radium-226, lead and lead compounds, and silver and silver compounds.

#### **3.9.1     *Ore Mining Category 2015 Toxicity Rankings Analysis***

Table 3-65 compares the toxicity rankings analyses (TRA) data for the Ore Mining Category from the 2011, 2013, and 2015 Annual Reviews. EPA did not conduct the TRA in 2012 or 2014, but instead reviewed additional data sources as part of the even-year annual review, as described in Section 2.2.1 of EPA's Preliminary 2016 Plan (U.S. EPA, 2016). During the 2015 Annual Review, EPA did not identify any data corrections to the 2013 Discharge Monitoring Report (DMR) and Toxic Release Inventory (TRI) discharge data for the Ore Mining Category.

**Table 3-65. Ore Mining Category TRI and DMR Facility Counts and Discharges Reported in 2009, 2011, and 2013**

Year of Discharge	Year of Review	Ore Mining Category Facility Counts <sup>a</sup>			Ore Mining Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities	TRI TWPE <sup>b</sup>	DMR TWPE <sup>c</sup>	Total TWPE
2009	2011	34	45	31	68,900	139,000	208,000
2011	2013	33	53	37	72,900 <sup>d</sup>	110,000	183,000 <sup>d</sup>
2013	2015	32	33	20	82,700	57,700	140,000

Sources: *TRIRelases2009\_v2*, *DMRLoads2009\_v2*, and 2011 Annual Review Report (for 2009 DMR and TRI data) (U.S. EPA, 2012); *DMRLTOutput2011\_v1*, *TRILTOutput2011\_v1*, and 2013 Annual Review Report (for 2011 DMR and TRI data) (U.S. EPA, 2014); *DMRLTOutput2013\_v1* (for 2013 DMR); *TRILTOutput2013\_v1* (for 2013 TRI).

Note: EPA did not evaluate 2010 or 2012 DMR and TRI data.

Note: TWPE values are rounded to three significant figures. Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Number of facilities with TWPE greater than zero.

<sup>b</sup> Discharges include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.

<sup>c</sup> Includes DMR data from both major and minor dischargers.

<sup>d</sup> 2011 DMR data after corrections were made during the 2013 Annual Review.

As shown in Table 3-65, the number of TRI facilities with pollutant releases has decreased slightly, while the TRI TWPE has increased from 2009 to 2013. The number of DMR facilities with pollutant discharges increased from 2009 to 2011 then decreased substantially from 2011 to 2013, while the DMR TWPE decreased from 2009 to 2013. The total number of permitted facilities (not just those that reported discharges greater than zero) also decreased from 2011 to 2013 (DMR Pollutant Loading Tool), suggesting that the number of U.S. ore mines may be declining.

### 3.9.2 Ore Mining Category Pollutants of Concern

EPA's 2015 review of the Ore Mining Category focused on the 2013 DMR and TRI discharges because both contribute to the category's combined TWPE. Table 3-66 shows the five pollutants with the highest contribution to the 2013 DMR TWPE. As a point of comparison, Table 3-66 also shows the 2011 DMR facility count and TWPE for these top five pollutants, based on the 2013 Annual Review (U.S. EPA, 2014). Copper, selenium, radium-226, and arsenic contribute 67 percent of the total 2013 DMR TWPE. The Ore Mining effluent limitations guidelines and standards (ELGs) regulate copper, radium-226, and arsenic, but do not include limitations for selenium. Sections 3.9.3 through 3.9.6 present EPA's investigation of these top DMR pollutants. EPA did not investigate molybdenum as part of the 2015 Annual Review because it represents a small percentage (9 percent) of the 2013 DMR TWPE for the Ore Mining Category.

Table 3-67 shows the five pollutants with the highest contribution to the 2013 TRI TWPE. As a point of comparison, Table 3-67 also shows the 2011 TRI facility count and TWPE for these top five pollutants, based on the 2013 Annual Review (U.S. EPA, 2014). EPA investigated lead and lead compounds and silver and silver compounds because they contribute



over 71 percent of the total 2013 TRI TWPE. Additionally, EPA investigated TRI discharges of arsenic and arsenic compounds and copper and copper compounds because they are top DMR pollutants. Sections 3.9.3 and 3.9.6 through 3.9.8 present EPA’s investigation of reported releases of the top TRI pollutants. EPA did not investigate vanadium and vanadium compounds as part of the 2015 Annual Review because they represent a small percentage (less than 8 percent) of the 2013 TRI TWPE for the Ore Mining Category.

**Table 3-66. Ore Mining Category Top DMR Pollutants**

Pollutant <sup>b</sup>	2013 DMR Data <sup>a</sup>		2011 DMR Data <sup>a</sup>	
	Number of Facilities Reporting Pollutant <sup>c</sup>	TWPE	Number of Facilities Reporting Pollutant <sup>c</sup>	TWPE
Copper	30	14,100	49	6,940
Selenium	13	9,140	15	2,060
Radium-226	4	8,050	0	0
Arsenic	14	7,470	19	11,800
Molybdenum	4	5,250	4	5,700
<b>Top Pollutant Total</b>	<b>NA</b>	<b>44,000</b>	<b>NA</b>	<b>26,500</b>
<b>Ore Mining Category Total</b>	<b>53</b>	<b>57,700</b>	<b>90</b>	<b>110,000</b>

Sources: *DMRLTOutput2013\_v1* (for 2013 TWPE); *DMRLTOutput2011\_v1* (for 2011 facility counts)

Note: Sums of individual values may not equal the total presented, due to rounding.

NA: Not applicable.

<sup>a</sup> Includes DMR data from both major and minor dischargers.

<sup>b</sup> Molybdenum discharges contribute 9 percent of the 2013 category DMR TWPE. Therefore, EPA did not review molybdenum discharges as part of the 2015 Annual Review.

<sup>c</sup> Number of facilities with TWPE greater than zero.

**Table 3-67. Ore Mining Category Top TRI Pollutants**

Pollutant <sup>a</sup>	2013 TRI Data		2011 TRI Data	
	Number of Facilities Reporting Pollutant <sup>b</sup>	TWPE	Number of Facilities Reporting Pollutant <sup>b</sup>	TWPE <sup>c</sup>
Lead and Lead Compounds	25	42,700	25	33,600
Silver and Silver Compounds	3	16,500	3	16,500
Vanadium and Vanadium Compounds	4	5,920	4	4,530
Arsenic and Arsenic Compounds	5	4,640	6	3,820
Copper and Copper Compounds	17	3,110	17	3,280
<b>Top Pollutant Total</b>	<b>NA</b>	<b>72,900</b>	<b>NA</b>	<b>61,700</b>
<b>Ore Mining Category Total</b>	<b>32</b>	<b>82,700</b>	<b>33</b>	<b>72,900</b>

Sources: *TRILTOOutput2011\_v1* (for 2011 TRI TWPE); *TRILTOOutput2013\_v1* (for 2013 TRI TWPE)

Note: Sums of individual values may not equal the total presented, due to rounding.

NA: Not applicable.

<sup>a</sup> Vanadium and vanadium compound releases contribute less than 8 percent of the 2013 category TRI TWPE. Therefore, EPA did not review vanadium and vanadium compound releases as part of the 2015 Annual Review.

<sup>b</sup> Number of facilities with TWPE greater than zero.

<sup>c</sup> 2011 data after corrections were made during the 2013 Annual Review.

### 3.9.3 Ore Mining Copper Discharges in DMR and TRI

EPA’s investigation of the copper and copper compound discharges in TRI revealed that 17 facilities account for 3,110 TWPE, with no facility contributing more than 200 TWPE, on average. Because each facility contributes less than 200 TWPE on average, EPA did not review copper and copper compound releases reported to TRI for individual facilities.

In contrast to TRI, EPA’s investigation of the DMR copper discharges revealed that two facilities, Northshore Mining – Silver Bay, in Silver Bay, MN, and Copper Range Company’s White Pine Mine, in White Pine, MI, account for 76 percent of the 2013 DMR copper discharges (shown in Table 3-68). EPA did not investigate the remaining facilities discharging copper as part of the 2015 Annual Review.

**Table 3-68. Top 2013 DMR Copper Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
Northshore Mining – Silver Bay	Silver Bay, MN	11,500	7,260	51.7%
Copper Range Company White Pine Mine	White Pine, MI	5,420	3,420	24.3%
All other copper dischargers in the Ore Mining Category <sup>a</sup>		5,360	3,380	24.0%
<b>Total</b>		<b>22,300</b>	<b>14,100</b>	<b>100%</b>

Source: *DMRLTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 28 additional facilities submitted copper discharges in the 2013 DMR data.

### ***Northshore Mining – Silver Bay***

Northshore Mining in Silver Bay, MN, is a taconite<sup>27</sup> mine with a processing facility and power plant onsite. The facility discharges copper from one outfall. As part of the 2015 Annual Review, EPA contacted the mine about the copper discharges. The facility contact confirmed the 2013 DMR copper discharges and stated that the facility monitors copper discharges yearly from a non-contact cooling water discharge from the onsite power plant, in accordance with the facility’s NPDES permit. The facility does not have a permit limit for copper (Hayden, 2015). The Iron Ore Subcategory, Subpart A, of the Ore Mining ELGs does not include limitations for copper.

Table 3-69 presents Northshore Mining’s copper discharges from 2010 through 2014. As shown, discharges increased from 2012 to 2013, but decreased from 2013 to 2014. The facility has historically collected samples from a sample port on the discharge pipe. In June and July 2015, the facility collected samples from the sample port on the discharge pipe, inside the diffuser box at the outlet to the lake, and from the lake. It was determined that sample contamination is occurring from the sample port on the discharge pipe, resulting in elevated copper discharges. The facility contact stated that starting with the 2015 reporting year; the facility will collect samples from inside the diffuser box at the outlet to the lake and submit the results on their DMRs (Hayden, 2015). Therefore, EPA expects copper discharges from this facility to decrease in future years.

**Table 3-69. Northshore Mining’s DMR Copper Discharges from 2010 – 2014**

Year	Pounds	TWPE
2010	8,250	5,200
2011	4,740	2,980
2012	6,110	3,850
2013	11,500	7,260
2014	4,170	2,630

Source: *DMRLTOOutput2013\_v1*; DMR Loading Tool.

<sup>27</sup> Taconite is a low-grade iron ore.

### **Copper Range Company’s White Pine Mine**

Copper Range Company’s White Pine Mine, in White Pine, MI, was an active copper mine from 1952 to 1995 (Michelson, 2014). As part of the 2015 Annual Review, EPA contacted the Michigan Department of Environmental Quality (MI DEQ) regarding the mine’s copper discharges. The MI DEQ contact stated that the White Pine Mine is closed and the discharges are from tailings runoff. The mine has an active NPDES permit, with monitoring-only requirements for copper (MI DEQ, 2010). The MI DEQ contact also stated that stormwater runoff typically drives the copper discharges for the mine, resulting in higher copper discharges with higher precipitation (Conroy, 2015). The Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory, Subpart J, of the Ore Mining ELGs includes concentration limitations for copper of 0.15 mg/L monthly average and 0.30 mg/L daily maximum. EPA compared the 2013 copper concentrations from the White Pine Mine to the Subpart J copper ELGs and found that all concentrations are below the monthly average and daily maximum limitations.

### **3.9.4 Ore Mining Selenium Discharges in DMR**

EPA’s investigation of the selenium discharges revealed that one facility, Tilden Mine in Ishpeming, MI, accounts for 89 percent of the 2013 selenium discharges (shown in Table 3-70). The remaining facilities account for a combined TWPE of 965, therefore, EPA did not investigate the remaining facilities discharging selenium as part of the 2015 Annual Review.

**Table 3-70. Top 2013 DMR Selenium Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
Tilden Mine <sup>a</sup>	Ishpeming, MI	7,300	8,170	89.4%
All other selenium dischargers in the Ore Mining Category <sup>b</sup>		862	965	10.6%
<b>Total</b>		<b>8,160</b>	<b>9,140</b>	<b>100%</b>

Source: *DMRLTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> This facility is named Cliffs District Lab in the DMR database (*DMRLTOOutput2013\_v1*). However, the facility’s permit lists the permittee as Tilden Mine.

<sup>b</sup> 12 additional facilities submitted selenium discharges in the 2013 DMR data.

Tilden Mine is a hematite<sup>28</sup> mine. The Iron Ore Subcategory, Subpart A, of the Ore Mining ELGs does not include limitations for selenium. As part of the 2015 Annual Review, EPA contacted the company to discuss their selenium discharges. Tilden Mine has a large tailings pond and sends the water through clarifiers before it is discharged. The facility permit was reissued in 2012 and included a schedule of compliance for selenium discharges. The facility completed a feasibility study of treatment options in August 2013, and is currently performing pilot studies for selected selenium treatment systems. The facility plans to implement a treatment system and meet permit limits<sup>29</sup> for selenium by November 2017 (Ketzenberger,

<sup>28</sup> Hematite is the mineral form of iron (III) oxide.

<sup>29</sup> The 2012 facility permit lists total selenium permit limits of 1.1 lb/day and 5.1 µg/L monthly average for outfall 002, effective November 1, 2017.

2015). EPA expects decreases in selenium discharges from this facility on future DMRs because of new limits on their permit and because new on site treatment technologies are to be installed at this facility.

### 3.9.5 Ore Mining Radium-226 Discharges in DMR

EPA’s investigation of the radium-226 discharges revealed that one facility, JD-7 and JD-9 Mines in Naturita, CO, accounts for over 99 percent of the 2013 radium-226 discharges (shown in Table 3-71). EPA did not investigate the remaining facilities discharging radium-226 as part of the 2015 Annual Review.

**Table 3-71. Top 2013 DMR Radium-226 Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
JD-7 and JD-9 Mines	Naturita, CO	0.00194	8,040	99.9%
All other radium-226 dischargers in the Ore Mining Category <sup>a</sup>		0.00000120	4.94	0.06%
<b>Total</b>		<b>0.00195</b>	<b>8,050</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Three additional facilities submitted radium-226 discharges in the 2013 DMR data.

JD-7 and JD-9 mines, owned by the Cotter Corporation, are uranium and vanadium mines. The Uranium, Radium, and Vanadium Ores Subcategory, Subpart C, of the Ore Mining ELGs includes concentration limitations for total Radium-226 10 mg/L monthly average and 30 mg/L daily maximum. The mines have not been actively operating since 1980. However, Cotter Corporation keeps the mines on active standby status, ready to resume production (CDPHE, 2011).

The 2013 radium-226 DMR discharge resulted from one measured concentration from outfall 001B at the JD-7 mine in September 2013. The facility discharges process water from the mine’s waste dump through outfall 001B. As part of the 2015 Annual Review, EPA contacted the Colorado Department of Public Health and Environment (CDPHE) to discuss the mine’s radium-226 discharges. The CDPHE contact confirmed the radium-226 discharge and contacted the facility directly to determine the reason behind the September 2013 discharge. The facility contact stated that a major flooding event in September 2013 caused the radium-226 discharge (Morgan, 2015). The facility has had no other radium-226 discharges from 2011 through 2014, indicating that the September 2013 discharge was an outlier.

### 3.9.6 Ore Mining Arsenic Discharges in DMR and TRI

EPA’s investigation of the arsenic discharges in DMR and TRI revealed that one facility, Kennecott Utah Copper Smelter and Refinery (Kennecott Utah) in Magna, UT, accounts for 69 percent and 66 percent of the DMR and TRI arsenic discharges, respectively (shown in Table 3-72 and Table 3-73). The remaining facilities account for a combined TWPE of 1,290 in DMR and 1,560 in TRI, therefore, EPA did not investigate the remaining facilities discharging arsenic in DMR or TRI as part of the 2015 Annual Review.

**Table 3-72. Top 2013 DMR Arsenic Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
Kennecott Utah Copper Smelter & Refinery	Magna, UT	1,290	5,200	69.6%
All other arsenic dischargers in the Ore Mining Category <sup>a</sup>		561	2,270	30.4%
<b>Total</b>		<b>1,850</b>	<b>7,470</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 13 additional facilities submitted arsenic discharges in the 2013 DMR data.

**Table 3-73. Top Facilities Reporting 2013 TRI Arsenic and Arsenic Compound Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
Kennecott Utah Copper Smelter & Refinery	Magna, UT	762	3,080	66.4%
All other arsenic dischargers in the Ore Mining Category <sup>a</sup>		386	1,560	33.6%
<b>Total</b>		<b>1,150</b>	<b>4,640</b>	<b>100%</b>

Source: *TRILTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Four additional facilities reported arsenic and arsenic compound releases in the 2013 TRI.

Kennecott Utah, owned by Rio Tinto, is a large, integrated facility that includes an open pit copper mine, a concentrator, a power plant, a smelter, a refinery, a reverse osmosis plant, a tailings pond, and a sewage treatment plant. All active facilities are west of Salt Lake City, UT. The concentrator typically processes approximately 170,000 tons of ore per day from the Bingham Canyon Mine (UT DEQ, 2009).

The facility discharges arsenic from six outfalls. Table 3-74 presents Kennecott Utah's DMR and TRI arsenic discharges from 2007 through 2014. As shown, both DMR and TRI arsenic discharges have remained consistent over this time period. Table 3-75 presents Kennecott Utah's 2013 DMR arsenic discharges and NPDES permit limits.<sup>30</sup> As shown, all 2013 DMR arsenic discharges are below the NPDES monthly average and daily maximum permit limits. The facility's high arsenic TWPE likely results from the relatively high level of industrial activity at the site.

**Table 3-74. Kennecott Utah's DMR and TRI Arsenic Discharges from 2007 – 2014**

Year	DMR TWPE	TRI TWPE
2007	3,170	1,170

<sup>30</sup> The facility's permit limits are based on the Ore Mining ELGs (40 CFR Part 440), Nonferrous Metals Manufacturing ELGs (40 CFR Part 421), Utah Secondary Treatment Standards, and Utah Water Quality Standards (UT DEQ, 2009).

**Table 3-74. Kennecott Utah's DMR and TRI Arsenic Discharges from 2007 – 2014**

Year	DMR TWPE	TRI TWPE
2008	5,460	1,210
2009	5,730	2,890
2010	5,370	1,230
2011	5,470	2,260
2012	4,230	1,210
2013	5,200	3,080
2014	3,790	NA

Source: *DMRLOutput2013\_v1*; *TRILOutput2013\_v1*; DMR Loading Tool.

NA: Not available.

**Table 3-75. Kennecott Utah's 2013 DMR Arsenic Discharges**

Outfall	Date	Reported Monthly Average Data			NPDES Permit Limits	
		Flow (MGD)	Quantity (kg/day)	Concentration (mg/L)	Monthly Average	Daily Maximum
004	31-Mar-13	7.6	NR	0.015	Monitoring Only	Monitoring Only
004	30-Jun-13	0	NR	0	Monitoring Only	Monitoring Only
004	30-Sep-13	4.6	NR	0.053	Monitoring Only	Monitoring Only
004	31-Dec-13	5.12	NR	0.03	Monitoring Only	Monitoring Only
008	31-Mar-13	0	NR	0	0.25 mg/L	0.50 mg/L
008	30-Jun-13	0.08	NR	0.068	0.25 mg/L	0.50 mg/L
008	30-Sep-13	0	NR	0	0.25 mg/L	0.50 mg/L
008	31-Dec-13	0	NR	0	0.25 mg/L	0.50 mg/L
010	31-Mar-13	0.05	NR	0.008	Monitoring Only	0.10 mg/L
010	30-Jun-13	0.04	NR	0.011	Monitoring Only	0.10 mg/L
010	30-Sep-13	0.05	NR	0.007	Monitoring Only	0.10 mg/L
010	31-Dec-13	0.07	NR	0.008	Monitoring Only	0.10 mg/L
012	31-Jan-13	13.2	NR	<0.005	0.25 mg/L	0.50 mg/L
012	28-Feb-13	15	NR	0.012	0.25 mg/L	0.50 mg/L
012	31-Mar-13	21.5	NR	0.018	0.25 mg/L	0.50 mg/L
012	30-Apr-13	19.5	NR	0.076	0.25 mg/L	0.50 mg/L
012	31-May-13	13.6	NR	0.043	0.25 mg/L	0.50 mg/L
012	30-Jun-13	0	NR	0	0.25 mg/L	0.50 mg/L
012	31-Jul-13	0	NR	0	0.25 mg/L	0.50 mg/L
012	31-Aug-13	0	NR	0	0.25 mg/L	0.50 mg/L
012	30-Sep-13	0	NR	0	0.25 mg/L	0.50 mg/L
012	31-Oct-13	20.1	NR	0.014	0.25 mg/L	0.50 mg/L
012	30-Nov-13	14	NR	0.032	0.25 mg/L	0.50 mg/L
012	31-Dec-13	0	NR	0	0.25 mg/L	0.50 mg/L
104	31-Jan-13	0.28	<0.0027	NR	5.08 kg/day	12.4 kg/day
104	28-Feb-13	0.34	0.0077	NR	5.08 kg/day	12.4 kg/day

104	31-Mar-13	0.31	0.0108	NR	5.08 kg/day	12.4 kg/day
104	30-Apr-13	0.29	0.34	NR	5.08 kg/day	12.4 kg/day
104	31-May-13	0.32	0.052	NR	5.08 kg/day	12.4 kg/day
104	30-Jun-13	0	0	NR	5.08 kg/day	12.4 kg/day
104	31-Jul-13	0	0	NR	5.08 kg/day	12.4 kg/day
104	31-Aug-13	0	0	NR	5.08 kg/day	12.4 kg/day
104	30-Sep-13	0.3	0.013	NR	5.08 kg/day	12.4 kg/day
104	31-Oct-13	0.34	0.016	NR	5.08 kg/day	12.4 kg/day
104	30-Nov-13	0.29	0.027	NR	5.08 kg/day	12.4 kg/day
104	31-Dec-13	0.25	0.011	NR	5.08 kg/day	12.4 kg/day
SW4	30-Jun-13	0.0000099	NR	0.053	Monitoring Only	Monitoring Only
SW4	31-Dec-13	0.000099	NR	0.006	Monitoring Only	Monitoring Only

Source: *DMRLTOutput2013\_v1*; UT DEQ, 2009

### 3.9.7 Ore Mining Lead and Lead Compound Discharges in TRI

EPA's investigation of lead and lead compound discharges revealed that three facilities account for 91 percent of the lead and lead compound discharges reported in to TRI in 2013 (shown in Table 3-76). The remaining facilities account for a combined TWPE of 3,500, therefore, EPA did not investigate the remaining facilities discharging lead and lead compounds as part of the 2015 Annual Review.

**Table 3-76. Top Facilities Reporting 2013 TRI Lead and Lead Compound Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
Fletcher Mine	Centerville, MO	8,250	18,500	43.3%
Buick Mine	Boss, MO	6,870	15,400	36.0%
Brushy Creek Mine	Boss, MO	2,390	5,360	12.5%
All other lead and lead compound dischargers in the Ore Mining Category <sup>a</sup>		1,560	3,500	8.20%
<b>Total</b>		<b>19,100</b>	<b>42,700</b>	<b>100%</b>

Source: *TRILTOutput2013\_v1*

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 22 additional facilities reported lead and lead compound releases in the 2013 TRI.

Fletcher Mine, in Centerville, MO, and Buick Mine and Brushy Creek Mine in Boss, MO, are owned by Doe Run Resources Corporation, a lead mining company headquartered in St. Louis, MO, with facilities in southeast Missouri. Doe Run owns and operates several mining and milling facilities, as well as primary and secondary lead smelters. Ore from the mines at the Doe Run facilities is crushed, milled, and processed; lead concentrate is transported from the mills to the primary and secondary lead smelters for smelting and refining. Doe Run Resources Corporation agreed to a consent decree on October 8, 2010 with the U.S. Department of Justice, EPA, and the Missouri Department of Natural Resources (MO DNR), to spend approximately \$65 million to correct violations of several environmental laws at 10 of its lead mining, milling,



and smelting facilities in southeast Missouri. These 10 facilities include Fletcher Mine, Buick Mine, and Brushy Creek Mine (U.S. EPA, 2010).

As part of the 2015 Annual Review, EPA contacted MO DNR about lead and lead compound releases from these mines. The MO DNR contact stated that the mines are active and there is an administrative stay on enforcement activities for the sites due to the consent decree (Sappington, 2014). Table 3-77 presents the lead and lead compound TRI releases for Fletcher Mine, Buick Mine, and Brushy Creek Mine. As shown, lead and lead compound TRI releases have increased for all mines from 2009 to 2013. However, due to the consent decree, EPA expects lead discharges to decrease from Doe Run facilities over the next several years.

**Table 3-77. TRI Lead and Lead Compound Releases from 2009 – 2013**

Year	Fletcher Mine TWPE	Buick Mine TWPE	Brushy Creek Mine TWPE
2009	9,230	11,300	4,120
2010	7,700	10,200	2,710
2011	11,700	11,900	5,970
2012	10,500	12,800	3,480
2013	18,500	15,400	5,360

Source: *TRILTOOutput2013\_v1*; DMR Loading Tool.

### 3.9.8 Ore Mining Silver and Silver Compound Discharges in TRI

EPA’s investigation of the silver and silver compound discharges revealed that two facilities, Kennecott Utah Copper Smelter & Refinery, in Magna, UT and Kennecott Utah Copper Mine, in Bingham Canyon, UT, account for over 99 percent of the 2013 silver and silver compound discharges (shown in Table 3-78). EPA did not investigate the remaining facility discharging silver and silver compounds as part of the 2015 Annual Review.

**Table 3-78. Top Facilities Reporting 2013 TRI Silver and Silver Compound Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
Kennecott Utah Copper Smelter & Refinery	Magna, UT	500	8,240	49.9%
Kennecott Utah Copper Mine	Bingham Canyon, UT	500	8,240	49.9%
Freeport-McMoran Miami Inc.	Claypool, AZ	0.6	9.88	0.06%
<b>Total</b>		<b>1,000</b>	<b>16,500</b>	<b>100%</b>

Source: *TRILTOOutput2013\_v1*

Note: Sums of individual values may not equal the total presented, due to rounding.

Rio Tinto owns both the Kennecott Utah Copper Smelter and Refinery, in Magna, UT, and Kennecott Utah Copper Mine, in Bingham Canyon, UT. Section 3.9.6 discusses arsenic discharges from the Magna, UT location, which is a large, integrated copper mining facility. Both facilities reported 500 pounds of silver and silver compounds discharged to TRI from 2007 through 2013.

As part of the 2015 Annual Review, EPA contacted Rio Tinto to confirm the TRI silver and silver compound releases for both Kennecott facilities. According to the contact, the company bases the TRI silver and silver compound release on plant knowledge that silver releases are at least an order of magnitude less than copper releases, and on historical plant data for silver concentrations in the tailings pond. The facility uses a conservative maximum estimate of 1,000 pounds of silver released to water, divided equally between the copper smelter and refinery in Magna, UT, and the mine in Bingham Canyon, UT (Nannini, 2014). The facility does not have silver discharges in the 2013 DMR data.

### 3.9.9 Ore Mining Category Findings

The estimated toxicity of the Ore Mining Category discharges resulted primarily from copper, selenium, radium-226, and arsenic discharges reported on DMRs, and lead and lead compound and silver and silver compound releases reported to TRI. From the 2015 Annual Review, EPA found:

- **Copper.** Two facilities, Northshore Mining, in Silver Bay, MN, and White Pine Mine, in White Pine, MI, account for 76 percent of the 2013 copper discharges. The Northshore Mining facility contact confirmed that copper discharges result from contamination at the sample port on the discharge pipe. Starting with the 2015 reporting year, the facility will collect samples from inside the diffuser box at the outlet to the lake. Therefore, EPA expects copper discharges from this facility to decrease in future years. The White Pine Mine is closed and discharges are from tailings runoff, which typically fluctuate with yearly rainfall. EPA does not consider these copper discharges to be representative of the Ore Mining Category.
- **Selenium.** One facility, Tilden Mine in Ishpeming, MI, accounts for 89 percent of the 2013 selenium discharges. The facility permit was reissued in 2012 and included a schedule of compliance for selenium discharges. The facility plans to implement new on site treatment technologies to meet revised permit limits for selenium by 2017; therefore, EPA expects decreases in selenium discharges from this facility on future DMRs.
- **Radium-226.** One facility, JD-7 and JD-9 mines in Naturita, CO, accounts for over 99 percent of the 2013 radium-226 discharges. The 2013 radium-226 discharges resulted from one measured concentration from an outfall where the facility discharges process water from the mine's waste dump. The facility confirmed the 2013 discharge resulted from a major flooding event at the site in September 2013; the facility has had no other radium-226 discharges from 2011 through 2014, indicating that the 2013 discharge was an outlier. For this reason, EPA does not consider radium-226 discharges from the JD-7 and JD-9 mines to be representative of typical discharges from this facility or from the Ore Mining Category.
- **Arsenic.** One facility, Kennecott Utah Copper Smelter and Refinery in Magna, UT, accounts for 69 percent and 66 percent of the DMR and TRI arsenic discharges, respectively. The facility is a large, integrated copper mining facility. The facility's 2013 DMR arsenic discharges are below the NPDES monthly average and daily maximum permit limits. The facility's high arsenic TWPE likely results from the

relatively high level of industrial activity at the site. Therefore, EPA does not consider the facility's arsenic discharges to be representative of discharges across the Ore Mining Category.

- **Lead.** Three mines, Fletcher Mine, in Centerville, MO, and Buick Mine and Brushy Creek Mine, in Boss, MO, account for 91 percent of the TRI lead and lead compound releases; Doe Run Resources Corporation owns all three mines. Doe Run agreed to a consent decree on October 8, 2010 to correct violations of several environmental laws at many of its facilities, including Fletcher Mine, Buick Mine, and Brushy Creek Mine. Therefore, EPA expects lead discharges from Doe Run facilities to decrease in the future.
- **Silver.** Two facilities, Kennecott Utah Copper Smelter and Refinery, Magna, UT, and Kennecott Utah Copper Mine in Bingham Canyon, UT, account for over 99 percent of the 2013 silver and silver compound releases. Rio Tinto owns both facilities, which are part of a large, integrated copper mining facility. The facility confirmed the 2013 TRI silver and silver compound releases and stated that the releases are based on estimates from historical plant data for silver concentrations. Because the facility bases its reported TRI releases on conservative estimates not confirmed with sampling data, EPA cannot assess how representative they are of actual silver and silver compound releases from the facility.

#### 3.9.10 Ore Mining and Dressing Category References

1. CDPHE. 2011. Colorado Department of Public Health and Environment. NPDES Permit and Fact Sheet: Cotter Corporation – JD-7 and JD-9 Mines, Naturita, CO (CO0036251). (June 1). EPA-HQ-OW-2015-0665. DCN 08186.
2. Conroy, Randy. 2015. Telephone and Email Communication Between Randy Conroy, Michigan Department of Environmental Quality, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Copper Discharges for Copper Range Co. (June 10). EPA-HQ-OW-2015-0665. DCN 08187.
3. ERG. 2015. Preliminary Category Review – Facility Data Review for Point Source Category – 440 – Ore Mining and Dressing. (September). EPA-HQ-OW-2015-0665. DCN 08188.
4. Hayden, Andrea. 2015. Telephone and Email Communication Between Andrea Hayden, Cliffs Natural Resources, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Copper Discharges for Northshore Mining. (June 9). EPA-HQ-OW-2015-0665. DCN 08189.
5. Ketzenberger, Brent. 2015. Telephone and Email Communication Between Brent Ketzenberger, Cliffs Natural Resources, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Selenium Discharges for Tilden Mine, Ishpeming, MI. (June 9). EPA-HQ-OW-2015-0665. DCN 08190.
6. Michelson, Daniel. 2014. Michigan Technological University. Copper Range Company Records, MS-080. (June 25). EPA-HQ-OW-2015-0665. DCN 08191.

7. MI DEQ. 2010. Michigan Department of Environmental Quality. NPDES Permit for Copper Range Company, White Pine, MI (MI0006114). (November 1). EPA-HQ-OW-2015-0665. DCN 08192.
8. Morgan, Kelly. 2015. Telephone and Email Communication Between Kelly Morgan, Colorado Department of Public Health & Environment, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Radium-226 Discharges for JD-7 and JD-9 Mines. (June 9). EPA-HQ-OW-2015-0665. DCN 08193.
9. Nannini, Tom. 2014. Telephone and Email Communication Between Tom Nannini, Rio Tinto Kennecott, and Eva Knoth, Eastern Research Group, Inc., Re: 2013 TRI Water Releases for Kennecott Utah Copper. (December 16). EPA-HQ-OW-2015-0665. DCN 08194.
10. Sappington, Amanda. 2014. Telephone and Email Communication Between Amanda Sappington, Missouri Department of Natural Resources, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 TRI Lead Discharges for Fletcher Mine and Buick Mine. (December 23). EPA-HQ-OW-2015-0665. DCN 08195.
11. U.S. EPA. 2009. *Technical Support Document for the Preliminary 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-821-R-09-006. EPA-HQ-OW-2008-0517-0514.
12. U.S. EPA. 2010. *Doe Run Resources Corporation Settlement*. (October 8). EPA-HQ-OW-2015-0665. DCN 08196.
13. U.S. EPA. 2011a. *Technical Support Document for the 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA 820-R-10-021. EPA-HQ-OW-2008-0517-0618.
14. U.S. EPA. 2011b. *Ore Mining and Dressing Preliminary Study Report*. Washington, D.C. (December). EPA-821-R-08-012. EPA-HQ-OW-2008-0517-0712.
15. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.
16. U.S. EPA. 2014. *The 2013 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-003. EPA-HQ-OW-2014-0170-0077.
17. U.S. EPA. 2016. *Preliminary 2016 Effluent Guidelines Program Plan*. Washington, D.C. (June). EPA-821-R-16-001. EPA-HQ-OW-2015-0665. DCN 08208.
18. UT DEQ. 2009. Utah Department of Environmental Quality. NPDES Permit for Kennecott Utah Copper LLC, Magna, UT (UT0000051). (November 12). EPA-HQ-OW-2015-0665. DCN 08197.

### **3.10    Organic Chemicals, Plastics, and Synthetic Fibers (40 CFR Part 414)**

EPA identified the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) Category for preliminary review because it ranks high again, in terms of toxic-weighted pound equivalents (TWPE), in the final 2015 combined point source category rankings. Previously, EPA reviewed discharges from this category as part of the 2004 through 2011, and 2013 Annual Reviews in which it also ranked high (U.S. EPA, 2004, 2005a, 2005b, 2006, 2007, 2008, 2009, 2011a, 2012, 2014). In addition, EPA conducted a preliminary study of carbon disulfide discharges from cellulose products manufacturers in 2011 (U.S. EPA, 2011b) and reviewed discharges from the chlorinated hydrocarbon manufacturing segment of the OCPSF Category as part of the Chlorine and Chlorinated Hydrocarbons (CCH) effluent guidelines rulemaking.<sup>31</sup>

This section summarizes the results of the 2015 Annual Review. EPA focused its 2015 review on discharges of polycyclic aromatic compounds (PACs), total residual chlorine, hexachlorobenzene, dioxin and dioxin-like compounds, carbon disulfide, and nitrate compounds because of their high TWPE relative to the other pollutants discharged by facilities in the OCPSF Category. Total residual chlorine and hexachlorobenzene, reviewed as part of the 2013 Annual Review, continue to contribute large proportions of the total category TWPE. For the 2015 Annual Review, available discharge data also showed significant contributions of PACs, dioxin and dioxin-like compounds, carbon disulfide, and nitrate compounds.

#### **3.10.1    *OCPSF Category 2015 Toxicity Rankings Analysis***

Table 3-79 compares the toxicity rankings analyses (TRA) data for the OCPSF Category from the 2011, 2013, and 2015 Annual Reviews. EPA did not conduct the TRA in 2012 or 2014, but instead reviewed additional data sources as part of the even-year annual review, as described in Section 2.2.1 of EPA's Preliminary 2016 Plan (U.S. EPA, 2016). As discussed in this section, during the 2015 Annual Review, EPA identified data corrections that affected the 2013 Discharge Monitoring Report (DMR) and Toxic Release Inventory (TRI) data and TWPE. The bottom row of Table 3-79 shows the corrected data resulting from this review.

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<sup>31</sup> Based on the information collected during the rulemaking, EPA proposed to delist the CCH manufacturing industry and discontinue the rulemaking in 2012.

**Table 3-79. OCPSF Category TRI and DMR Facility Counts and Discharges Reported in 2009, 2011, and 2013**

Year of Discharge	Year of Review	OCPSF Category Facility Counts <sup>a</sup>			OCPSF Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities	TRI TWPE <sup>b</sup>	DMR TWPE <sup>c</sup>	Total TWPE
2009	2011	671	169	150	146,000	491,000 <sup>d</sup>	637,000 <sup>d</sup>
2011	2013	631	165	180	148,000	658,000 <sup>e</sup>	806,000 <sup>e</sup>
2013	2015	651	136	144	333,000 <sup>f</sup>	301,000 <sup>f</sup>	634,000 <sup>f</sup>
					286,000 <sup>g</sup>	224,000 <sup>g</sup>	510,000 <sup>g</sup>

Sources: 2013 Annual Review Report (for 2009 and 2011 DMR and TRI data) (U.S. EPA, 2014); *DMRLTOutput2013\_v1* (for 2013 DMR); *TRILTOutput2013\_v1* (for 2013 TRI).

Note: EPA did not evaluate 2010 or 2012 DMR and TRI data.

Note: TWPE values are rounded to three significant figures. Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Number of facilities with TWPE greater than zero.

<sup>b</sup> Releases include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.

<sup>c</sup> Includes DMR data from both major and minor dischargers.

<sup>d</sup> 2009 DMR data after corrections were made during the 2011 Annual Review.

<sup>e</sup> 2011 DMR data after corrections were made during the 2013 Annual Review.

<sup>f</sup> 2013 DMR data prior to corrections made during the 2015 Annual Review.

<sup>g</sup> 2013 DMR data after corrections were made during the 2015 Annual Review.

As shown in Table 3-79, the total TWPE increased from 2009 to 2011 then decreased from 2011 to 2013, mainly due to a decrease in DMR discharges. However, TRI releases increased, driven by a substantial rise in reported releases of carbon disulfide (discussed in Section 3.10.7, below). Additionally, the number of facilities reporting discharges on DMRs decreased from 2009 to 2013.

### 3.10.2 OCPSF Category Pollutants of Concern

EPA's 2015 review of the OCPSF Category focused on the 2013 DMR and TRI discharges because both contribute to the category's combined TWPE. Table 3-80 shows the five pollutants with the highest contribution to the 2013 DMR TWPE. As a point of comparison, Table 3-80 also shows the 2011 DMR facility count and TWPE for these top pollutants, based on the 2013 Annual Review (U.S. EPA, 2014). The top five pollutants contribute more than 60 percent of the original 2013 DMR TWPE for the OCPSF Category (prior to corrections discussed below). The OCPSF effluent limitations guidelines and standards (ELGs) currently regulate benzo[a]pyrene, hexachlorobenzene, and benzo[k]fluoranthene, but not total residual chlorine or 2,3,7,8-tetrachlorodibenzo-p-dioxin. EPA's investigations of reported discharges of these pollutants are summarized in Sections 3.10.3 to 3.10.6.

Table 3-81 shows the five pollutants with the highest contribution to the 2013 TRI TWPE. As a point of comparison, Table 3-81 also shows the 2011 TRI facility count and TWPE for these top pollutants, based on the 2013 Annual Review (U.S. EPA, 2014). Carbon disulfide, dioxin and dioxin-like compounds, PACs, and nitrate compounds contribute 77 percent of the

original 2013 TRI TWPE for the OCPSF Category (prior to corrections discussed below). EPA's investigations of reported discharges of these pollutants are summarized in Sections 3.10.3, and 3.10.6 through 3.10.8. EPA did not investigate hydroquinone as part of the 2015 Annual Review because it represents a small percentage (less than 4 percent) of the 2013 TRI TWPE for the OCPSF Category.

**Table 3-80. OCPSF Category Top DMR Pollutants**

Pollutant	2013 DMR Data <sup>a</sup>			2011 DMR Data <sup>a</sup>	
	Number of Facilities Reporting Pollutant <sup>c</sup>	Original TWPE	Corrected TWPE	Number of Facilities Reporting Pollutant <sup>b</sup>	TWPE
Benzo[a]pyrene	12	59,800	3,230	11	37,200
Total Residual Chlorine	97	49,200	49,200	110	59,500
Hexachlorobenzene	10	28,800	28,800	11	61,800
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2	25,200	25,200	1	1,000
Benzo[k]fluoranthene	9	18,200	971	10	10,200
<b>Top Pollutant Total</b>	<b>NA</b>	<b>181,000</b>	<b>107,000</b>	<b>NA</b>	<b>179,000</b>
<b>OCPSF Category Total</b>	<b>280</b>	<b>301,000</b>	<b>224,000</b>	<b>345</b>	<b>658,000</b>

Sources: *DMRLTOOutput2013\_v1* (for 2013 data); *DMRLTOOutput2011\_v1* (for 2011 data).

Note: Sums of individual values may not equal the total presented due to rounding.

NA: Not applicable.

<sup>a</sup> Includes DMR data from both major and minor dischargers.

<sup>b</sup> Number of facilities with TWPE greater than zero.

**Table 3-81. OCPSF Category Top TRI Pollutants**

Pollutant <sup>a</sup>	2013 TRI Data			2011 TRI Data	
	Number of Facilities Reporting Pollutant <sup>b</sup>	Original TWPE	Corrected TWPE	Number of Facilities Reporting Pollutant <sup>b</sup>	TWPE
Carbon Disulfide	10	157,000	157,000	8	5,310
Dioxin and Dioxin-like Compounds	3	69,700	22,500	4	25,000
Polycyclic Aromatic Compounds	9	16,300	16,300	8	7,530
Nitrate Compounds	121	13,200	13,200	104	14,200
Hydroquinone	5	10,300	10,300	5	8,790
<b>Top Pollutant Total</b>	<b>NA</b>	<b>267,000</b>	<b>220,000</b>	<b>NA</b>	<b>60,800</b>
<b>OCPSF Category Total</b>	<b>651</b>	<b>333,000</b>	<b>286,000</b>	<b>631</b>	<b>148,000</b>

Sources: *TRILTOOutput2011\_v1*; *TRILTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

NA: Not applicable.

<sup>a</sup> Hydroquinone releases contribute 3.1 percent of the original 2013 category TRI TWPE. Therefore, EPA did not review hydroquinone releases as part of the 2015 Annual Review.

<sup>b</sup> Number of facilities with TWPE greater than zero.

### 3.10.3 OCPSF Category PACs Discharges in DMR and TRI

EPA reviewed 2013 DMR and TRI PACs discharges from OCPSF facilities for the 2015 Annual Review. EPA's investigation of the 2013 DMR PACs data revealed that two facilities, Honeywell International, Inc. (Honeywell), in Hopewell, VA, and E. I. DuPont de Nemours in Washington, WV, account for 94 percent of the 2013 DMR PACs discharges, which consist of benzo[a]pyrene and benzo[k]fluoranthene<sup>32</sup> discharges (shown in Table 3-82). EPA did not investigate the remaining facilities discharging benzo[a]pyrene, benzo[k]fluoranthene or other PACs as part of the 2015 Annual Review.

<sup>32</sup> Benzo[a]pyrene and benzo[k]fluoranthene are PACs. Facilities submit DMR data for individual PACs. In TRI, facilities report PACs as a chemical category.



**Table 3-82. Top 2013 DMR PACs Discharging Facilities**

Facility Name	Facility Location	Benzo[a]pyrene			Benzo[k]fluoranthene		
		Pounds Discharged	TWPE	Percent of Category TWPE	Pounds Discharged	TWPE	Percent of Category TWPE
Honeywell International, Inc. Hopewell Plant	Hopewell, VA	322	32,400	54%	322	9,870	54%
E. I. DuPont de Nemours - Washington Works	Washington, WV	240	24,200	40%	240	7,360	40%
All other pollutant dischargers in the OCPSF Category <sup>a</sup>		32.1	3,230	6%	31.7	971	6%
<b>Total</b>		<b>594</b>	<b>59,800</b>	<b>100%</b>	<b>594</b>	<b>18,200</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Ten additional facilities submitted benzo[a]pyrene discharges in the 2013 DMR data. Seven additional facilities submitted benzo[k]fluoranthene discharges in the 2013 DMR data.

EPA's investigation of the 2013 TRI PACs releases revealed that two facilities, Sasol North America Inc. Lake Charles Chemical Complex (Sasol), in Westlake, LA and ExxonMobil Chemical Co. Baytown Olefins Plant (ExxonMobil), in Baytown, TX, account for 96 percent of the 2013 TRI PACs releases (as shown in Table 3-83 below). EPA did not investigate the remaining facilities releasing PACs as part of the 2015 Annual Review.

**Table 3-83. Top Facilities Reporting 2013 TRI PACs Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
Sasol North America, Inc. Lake Charles Chemical Complex	Westlake, LA	123	12,300	76%
ExxonMobil Chemical Co. Baytown Olefins Plant	Baytown, TX	33	3,320	20%
All other PACs releases in the OCPSF Category <sup>a</sup>		6.54	658	4%
<b>Total</b>		<b>162</b>	<b>16,300</b>	<b>100%</b>

Source: *TRILTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Seven additional facilities reported PACs releases in the 2013 TRI.

### ***Honeywell International Inc. Hopewell Plant***

The Honeywell International Hopewell, VA plant discharges benzo[a]pyrene and benzo[k]fluoranthene from outfall 101, which discharges contact cooling water from two barometric condensers (VA DEQ, 2008). After EPA downloaded the 2013 DMR data from the DMR Loading Tool for the 2015 Annual Review, the facility subsequently updated their DMR data to add a below-detection-limit code to their reports of benzo[a]pyrene and benzo[k]fluoranthene, indicating that loads for these pollutants should be zero. Therefore, EPA zeroed the benzo[a]pyrene and benzo[k]fluoranthene discharges for the facility, which decreased

the OCPSF benzo[a]pyrene TWPE from 59,800 to 27,400, and benzo[k]fluoranthene TWPE from 18,200 to 8,330. These corrections are reflected in Table 3-80.

### ***E. I. DuPont de Nemours - Washington Works***

E. I. DuPont de Nemours – Washington Works, in Washington, WV, discharges benzo[a]pyrene and benzo[k]fluoranthene from outfalls 002, 005, and 105. As part of the 2015 Annual Review, EPA verified the 2013 DMR data with the West Virginia Department of Environmental Protection (WV DEP). The facility’s DMRs (from WV DEP) indicated that all benzo[a]pyrene and benzo[k]fluoranthene discharges were below the detection limit in 2013. Therefore, EPA zeroed the facility’s benzo[a]pyrene and benzo[k]fluoranthene discharges, further decreasing the OCPSF benzo[a]pyrene TWPE to 3,230 and the benzo[k]fluoranthene TWPE to 971. These corrections are reflected in Table 3-80.

### ***Sasol North America Inc. Lake Charles Chemical Complex***

Sasol is an organic chemical manufacturing plant in Westlake, LA. EPA previously reviewed this facility as part of the 2011 and 2013 Annual Reviews. Sasol discharges process wastewater, stormwater, sanitary wastewater, and miscellaneous utility wastewaters through eight outfalls. The facility’s 2009 NPDES permit includes limits for 5 PACs compounds<sup>33</sup> (LA DEQ, 2009a). Because Sasol plans to approximately triple the company’s chemical production capacity from 2015 to 2018 (Sasol, 2015), a revised permit was issued for the facility in 2014. The revised permit includes four phases of pollutant limits, including PACs, as construction progresses at the site.<sup>34</sup> The pollutant limits are more stringent for each phase of construction, requiring the facility to meet the most stringent limits in 2018, when expansion is scheduled to be completed (LA DEQ, 2014).

As part of the 2015 Annual Review, EPA contacted the facility. The contact stated that Sasol’s TRI PACs releases are based on the samples taken for their NPDES permit and that increases in the load released are due to an increase in flow from increased production and rainfall (Shaw, 2014). EPA reviewed 2013 DMR PACs discharges for Sasol, shown in Table 3-84, and determined that all discharges are below the 2009 permit limits. Even though the facility plans to increase production capacity in future years, the facility’s PACs discharges may decrease due to the more stringent limits included in the facility’s revised permit.

**Table 3-84. Sasol’s 2013 DMR PACs Discharges**

PACs	Outfall	Date	Flow (MGD)	Reported Quantity (kg/day)	Calculated Quantity (lb/day)	2009 NPDES Monthly Average Permit Limit (lb/day)
Benzo(a)anthracene	001	31-Mar-13	2.11	0	0	0.164
	001	30-Jun-13	2.77	0.041	0.090	0.164
	001	30-Sep-13	2.57	0	0	0.164
	001	31-Dec-13	2.34	0	0	0.164
Benzo(a)pyrene	001	31-Mar-13	2.11	0	0	0.164
	001	30-Jun-13	2.77	0.041	0.090	0.164

<sup>33</sup> Benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene.

<sup>34</sup> The monthly average permit limits during the four phases of construction for benzo(a)anthracene and benzo(a)pyrene are each: phase 1 – 0.164 lb/day, phase 2 – 0.0578 lb/day, phase 3 – 0.0289 lb/day, phase 4 – 0.0211 lb/day (LA DEQ, 2014).

**Table 3-84. Sasol's 2013 DMR PACs Discharges**

PACs	Outfall	Date	Flow (MGD)	Reported Quantity (kg/day)	Calculated Quantity (lb/day)	2009 NPDES Monthly Average Permit Limit (lb/day)
	001	30-Sep-13	2.57	0	0	0.164
	001	31-Dec-13	2.34	0	0	0.164

Source: *DMRLTOutput2013\_v1*, LA DEQ, 2009a.

### ***ExxonMobil Chemical Co. Baytown Olefins Plant***

EPA has not reviewed TRI PACs releases from ExxonMobil in Baytown, TX, as part of recent annual reviews. As part of the 2015 Annual Review, EPA contacted the facility to discuss PACs releases. The facility contact confirmed the reported 2013 TRI PACs releases and stated that the releases were calculated based on a measured flow from their stormwater outfall multiplied by half the detection limit of three PACs<sup>35</sup> that may be present in the wastewater. The facility contact stated that the PACs releases were calculated to provide a conservative estimate; however, the facility reevaluated this approach and determined that there was no reason to conclude PACs are released at this outfall, because the site's stormwater has no contact with process areas. Beginning with the 2014 reporting year, the facility plans to report zero PACs wastewater releases to TRI (Brewer, 2015).

Table 3-85 presents the TRI PACs releases from 2009 through 2013. The facility contact confirmed the variation in PACs releases from 2009 through 2013 was due to variation in flow. The facility's NPDES permit does not require monitoring of PACs; therefore, the facility does not submit PAC discharges on their DMRs (Brewer, 2015). Based on the information provided by the facility contact, EPA expects a decrease in PACs releases reported to TRI from this facility.

**Table 3-85. ExxonMobil's PACs TRI Releases, 2009 – 2013**

Year	Pounds of PAC Released	PACs TWPE
2009	50	5,000
2010	56	5,640
2011	19	1,910
2012	54	5,440
2013	33	3,320

Source: *DMRLTOutput2013\_v1*; DMR Loading Tool.

### **3.10.4 OCPSF Category Total Residual Chlorine Discharges in DMR**

Ninety-seven facilities submitted DMRs with total residual chlorine discharges in 2013. EPA previously reviewed total residual chlorine discharges from OCPSF facilities as part of the 2010 and 2013 Annual Reviews. As part of the 2010 review, EPA determined that a flow measurement error from one facility resulted in an elevated TWPE; as part of the 2013 review, EPA determined that discharges from the top facility were from an internal outfall, not an external outfall. For these reasons, as part of the 2010 and 2013 Annual Reviews, EPA determined that further review of total residual chlorine discharges was not warranted. Total

<sup>35</sup> Benzo(a)anthracene, benzo(a)pyrene, and chrysene.

residual chlorine is not regulated under the OCPSF ELGs. As shown in Table 3-80, the DMR discharges of total residual chlorine decreased by over 10,000 TWPE (over 17 percent) from 2011 to 2013, and the number of facilities with discharges also decreased.

EPA's investigation of the total residual chlorine discharges revealed that four facilities, Equistar Chemicals, in Channelview, TX; Bayer MaterialScience, in New Martinsville, WV; INEOS USA Green Lake Plant, in Port Lavaca, TX; and Goodyear Tire and Rubber Co., in Beaumont, TX; account for over 60 percent of the 2013 DMR total residual chlorine discharges (as shown in Table 3-86, below). EPA reviewed the DMR data submitted by these four facilities and did not identify any outliers or potential errors. All facilities met permit requirements in 2013: Bayer MaterialScience has monitoring requirements, while the other three facilities met minimum total residual chlorine permit limits.

EPA did not conduct a facility-level review of the remaining 93 facilities discharging total residual chlorine as part of the 2015 Annual Review, as none of the remaining 93 individual facilities accounted for more than 5,000 TWPE; however, a large number of facilities reported total residual chlorine discharges on DMRs in 2013 and the data suggest that three of the top four facilities have minimum total residual chlorine limits in their permits.

**Table 3-86. Top 2013 DMR Total Residual Chlorine Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
Equistar Chemicals	Channelview, TX	18,900	9,440	19%
Bayer MaterialScience	New Martinsville, WV	18,000	9,000	18%
INEOS USA Green Lake Plant	Port Lavaca, TX	12,200	6,110	12%
Goodyear Tire & Rubber Co.	Beaumont, TX	10,300	5,160	11%
All other total residual chlorine dischargers in the OCPSF Category <sup>a</sup>		39,000	19,500	40%
<b>Total</b>		<b>98,400</b>	<b>49,200</b>	<b>100%</b>

Source: *DMRLTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 93 additional facilities submitted total residual chlorine discharges in the 2013 DMR data.

### 3.10.5 OCPSF Category Hexachlorobenzene Discharges in DMR

EPA's investigation of the hexachlorobenzene discharges revealed that two facilities, Sasol, in Westlake, LA, and Nalco Company, in Garyville, LA, account for 93 percent of the 2013 TRI hexachlorobenzene discharges (as shown in Table 3-87 below). EPA did not investigate the remaining facilities discharging hexachlorobenzene as part of the 2015 Annual Review.

**Table 3-87. Top 2013 DMR Hexachlorobenzene Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
Sasol NA, Inc., Lake Charles Chemical Complex	Westlake, LA	8.28	16,100	56%
Nalco Company	Garyville, LA	5.48	10,700	37%
All other hexachlorobenzene dischargers in the OCPSF Category <sup>a</sup>		1.04	2,020	7%
<b>Total</b>		<b>14.8</b>	<b>28,800</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Eight additional facilities submitted hexachlorobenzene discharges in the 2013 DMR data.

### ***Sasol North America, Inc. Lake Charles Chemical Complex***

As discussed in Section 3.10.3, Sasol is an organic chemical manufacturing plant in Westlake, LA. Sasol discharges hexachlorobenzene from outfall 001, which is a continuous discharge of process wastewater, process area stormwater, and miscellaneous utility wastewaters.<sup>36</sup> The facility's 2009 NPDES permit includes limits for hexachlorobenzene of 0.005 lb/day monthly average and 0.012 lb/day daily maximum for outfall 001 (LA DEQ, 2009a). EPA reviewed 2013 DMR hexachlorobenzene discharges for Sasol (shown in Table 3-88) and determined that the June 2013 hexachlorobenzene discharge from outfall 001 is above the 2009 hexachlorobenzene permit limit for outfall 001. However, as shown in Table 3-89, Sasol's DMR hexachlorobenzene discharges from 2010 through 2014 have decreased. Additionally, Sasol's revised 2014 permit includes four phases of hexachlorobenzene limits, which are increasingly more stringent as construction progresses at the site through 2018<sup>37</sup> (LA DEQ, 2014). Even though the facility plans to increase production capacity in future years, the facility's hexachlorobenzene discharges may decrease due to the more stringent limits included in the facility's revised permit.

**Table 3-88. Sasol's 2013 DMR Hexachlorobenzene Discharges**

Outfall	Date	Flow (MGD)	Reported Quantity (kg/day)	Calculated Quantity (lb/day)	2009 NPDES Monthly Average Permit Limit (lb/day)
001	31-Mar-13	2.11	0	0	0.005
001	30-Jun-13	2.77	0.041	0.09	0.005

<sup>36</sup> Process wastewater, process area stormwater, and miscellaneous utility wastewaters are from the Normal Paraffin Unit, Ethoxylate Unit, Alcohol Unit, Alumina Unit, Linear Alkyl Benzene Unit, Ethylene Unit, Steam Plant, Georgia Gulf Lake Charles Vinyl Chloride Monomer Plant, and Activated Sludge Unit. Other wastewaters discharged through outfall 001 include sanitary wastewater, groundwater, holding ponds/basins stormwater, zeolite regeneration wastewater, boiler blowdown, sulfide caustic, lime settler wastewater, caustic wash quench settler blowdown, benzene contaminated water and steam condensate, and alcohol quench wastewater (LA DEQ, 2009a).

<sup>37</sup> The monthly average permit limits during the four phases of construction for hexachlorobenzene are: phase 1 – 0.0049 lb/day, phase 2 – 0.0017 lb/day, phase 3 – 0.0009 lb/day, phase 4 – 0.00006 lb/day. The daily maximum permit limits during the four phases of construction for hexachlorobenzene: phase 1 – 0.012 lb/day, phase 2 – 0.0041 lb/day, phase 3 – 0.0021 lb/day, phase 4 – 0.0015 lb/day (LA DEQ, 2014).

**Table 3-88. Sasol's 2013 DMR Hexachlorobenzene Discharges**

Outfall	Date	Flow (MGD)	Reported Quantity (kg/day)	Calculated Quantity (lb/day)	2009 NPDES Monthly Average Permit Limit (lb/day)
001	30-Sep-13	2.57	0	0	0.005
001	31-Dec-13	2.34	0	0	0.005

Source: *DMRLTOutput2013\_v1*, LA DEQ, 2009a.

**Table 3-89. Sasol's Hexachlorobenzene DMR Discharges, 2010 – 2014**

Year	Pounds of Hexachlorobenzene Discharged	Hexachlorobenzene TWPE
2010	28.3	55,200
2011	20.4	39,900
2012	25.8	50,400
2013	8.28	16,100
2014	8.27	16,100

Source: *DMRLTOutput2013\_v1*; DMR Loading Tool.

### ***Nalco Company***

Nalco Company discharges hexachlorobenzene from outfall 001. The outfall has a continuous discharge of treated process wastewater<sup>38</sup> (LA DEQ, 2009b). EPA previously reviewed hexachlorobenzene discharges from this facility as part of the 2011 Annual Review and determined that the reported daily maximum and monthly average concentrations do not exceed the hexachlorobenzene limits in the facility's permit (U.S. EPA, 2012). The facility's permit requires that the quantity of hexachlorobenzene discharged be reported annually (LA DEQ, 2009b). Table 3-90 presents Nalco's 2013 DMR hexachlorobenzene discharges and associated permit limits. As shown, the reported daily maximum and monthly average quantities do not exceed the hexachlorobenzene limits in the facility's permit.

**Table 3-90. 2013 DMR Hexachlorobenzene Discharges for Nalco Company**

	2013 DMR Data		Permit Limits	
	Flow (MGD)	Quantity (kg/day)	Pounds (lb/day)	Calculated Quantity (kg/day)
Daily Maximum	0.41	0.0068	0.1	0.0454
Monthly Average	0.41	0.0068	0.05	0.0227

Source: LADEQ, 2009b, *DMRLTOutput2013\_v1*.

### ***3.10.6 OCPSF Category Dioxin Discharges in DMR and TRI***

EPA reviewed 2013 DMR and TRI data on dioxin and dioxin-like compounds from OCPSF facilities for the 2015 Annual Review. EPA's investigation of the 2013 DMR dioxin data revealed that one facility, A.K.A. Solutia Nitro Site (Solutia), in Nitro, WV, accounts for over 99

<sup>38</sup> Treated process wastewater results from the following areas: acrylamide manufacturing, emulsion polymerization, general purpose reactors and blenders, Kathon<sup>TM</sup>/glutaraldehyde blends, storage and cleaning, Evonik polymer, and the lab. Process area stormwater, utility wastewaters from cooling tower blowdown, boiler blowdown, and water demineralizer, coagulants and cleaners wastewater, and treated sanitary wastewater are also discharged through outfall 001 (LA DEQ, 2009b).

percent of the 2013 DMR 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)<sup>39</sup> discharges (as shown in Table 3-91).

**Table 3-91. Top 2013 DMR TCDD Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
A.K.A. Solutia Nitro Site	Nitro, WV	0.0000359	25,200	99.9%
The Dow Chemical Company	Midland, MI	3.50 x 10 <sup>-9</sup>	2.46	0.01%
<b>Total</b>		<b>0.0000359</b>	<b>25,200</b>	<b>100%</b>

Source: *DMRLOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

EPA’s investigation of the 2013 TRI dioxin and dioxin-like compounds releases revealed that two facilities, Sasol, in Westlake, LA, and Dow Chemical, in Midland, MI, account for 93 percent of the 2013 TRI dioxin and dioxin-like compound releases (as shown in Table 3-92 below). EPA did not investigate the remaining facility, Shell Chemical, in Deer Park, TX, releasing dioxin and dioxin-like compounds as part of the 2015 Annual Review.

**Table 3-92. Top Facilities Reporting 2013 TRI Dioxin and Dioxin-like Compound Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
Sasol NA, Inc. Lake Charles Chemical Complex	Westlake, LA	0.00107	53,700	77%
The Dow Chemical Company	Midland, MI	0.00408	11,100	16%
Shell Chemical	Deer Park, TX	0.00170	4,870	7%
<b>Total</b>		<b>0.00685</b>	<b>69,700</b>	<b>100%</b>

Source: *TRILTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

### **A.K.A. Solutia Nitro Site**

Solutia’s Nitro Site is an active remedial construction site. The TCDD discharges at the site are a result of byproducts created by the production of the herbicide 2, 4, 5-trichlorophenoxyacetic acid at the site from 1948 to 1969. As part of the 2015 Annual Review, EPA contacted Solutia about the facility’s TCDD discharges. The facility contact stated that they are implementing remediation activities under a RCRA corrective action permit, which includes capping and covering areas with TCDD-affected soils, and pumping and treating groundwater from the affected area on site. Remediation activities were scheduled to be completed in summer 2015 (House, 2014). The facility’s DMR TCDD TWPE decreased from 25,200 in 2013 to 4,950 in 2014. The facility contact stated that TCDD discharges are expected to cease with the completion of the remediation activities (House, 2014). Because the facility is implementing

<sup>39</sup> TCDD is a dioxin compound. Facilities can submit DMR data for individual dioxin compounds. In TRI, facilities report dioxin compounds as the group of dioxin and dioxin-like compounds.

remediation activities, EPA expects the TCDD discharges to continue to decrease on future DMRs.

### ***The Dow Chemical Company***

Dow Chemical in Midland, MI, is a large chemical manufacturing facility and discharges dioxin and dioxin-like compounds from outfall 031. The facility is a top TRI discharger of dioxin and dioxin-like compounds in the OCPSF Category (as shown in Table 3-92).

EPA previously reviewed TRI dioxin and dioxin-like compound discharges from Dow Chemical as part of the 2009 Annual Review and determined that such discharges mostly resulted from historical processes. As part of the 2015 Annual Review, EPA contacted the facility to discuss its dioxin and dioxin-like compound discharges. The facility contact confirmed the 2013 TRI dioxin and dioxin-like compound discharges and stated that they were calculated from measured concentrations from bi-weekly wastewater composite samples using EPA Method 1613B (non-detect concentrations were treated as zero). The facility contact indicated that discharges are from historical processes and waste management units that are no longer in operation at the site (Kennett, 2015). Although TRI releases are based on sampling data, they are significantly higher than discharges submitted on the facility's DMRs. Table 3-93 presents TRI dioxin and dioxin-like compound discharges for Dow Chemical from 2008 through 2013. As shown, discharges ranged from 6,740 to 13,200 TWPE over those 6 years.

**Table 3-93. Dow Chemical Company TRI Dioxin and Dioxin-like Compound Releases, 2008 – 2013**

<b>Year</b>	<b>Dioxin and Dioxin-like Compound TWPE</b>
2008	11,300
2009	6,740
2010	13,200
2011	9,500
2012	8,890
2013	11,100

Source: *TRILTOOutput2013\_v1*, DMR Loading Tool.

### ***Sasol North America Inc. Lake Charles Chemical Complex***

EPA has previously reviewed TRI dioxin and dioxin-like compound releases from Sasol as part of the 2011 and 2013 Annual Reviews. As part of these reviews, the facility contact stated that the dioxin and dioxin-like compound distribution is based on an average of 12 different samples at the facility, and all non-detect results are equal to one half of the method detection limit. EPA revised the 2009 and 2011 dioxin loads based on the dioxin and dioxin-like compound distribution provided by the facility by zeroing the non-detect results (U.S. EPA, 2012 and 2014). As part of the 2015 Annual Review, the facility contact confirmed that the method of determining the TRI dioxin and dioxin-like compound release at the facility had not changed (Shaw, 2014). Therefore, EPA corrected the 2013 dioxin load similar to previous years by zeroing the non-detect results. Table 3-94 presents original and corrected pounds of dioxin and dioxin-like compound releases from 2009 through 2013. Incorporating this correction decreases the TRI dioxin and dioxin-like compound TWPE for the OCPSF category from 69,700 to 22,500, as shown in Table 3-81.



**Table 3-94. Sasol’s Dioxin and Dioxin-like Compound TRI Releases, 2009 – 2013**

Year	Original Pounds Discharged	Corrected Pounds Discharged
2009	0.000890	0.0006
2010	0.000898	0.000898 <sup>a</sup>
2011	0.000912	0.0006
2012	0.000943	0.000943 <sup>a</sup>
2013	0.00107	0.0007

Source: DMR Loading Tool; U.S. EPA, 2012, U.S. EPA 2014

<sup>a</sup> EPA did not review 2010 or 2012 dioxin and dioxin-like compound discharges for this facility; therefore, discharges were not corrected.

### 3.10.7 OCPSF Category Carbon Disulfide Releases in TRI

EPA’s investigation of carbon disulfide releases revealed that three facilities, Viskase Corp., in Loudon, TN, Innovia Films, Inc., in Tecumseh, KS, and Viscofan USA, Inc., in Danville, IL, account for 97 percent of the 2013 TRI carbon disulfide releases (as shown in Table 3-95). EPA did not investigate the remaining facilities releasing carbon disulfide as part of the 2015 Annual Review.

**Table 3-95. Top Facilities Reporting 2013 TRI Carbon Disulfide Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
Viskase Corporation	Loudon, TN	35,400	99,000	63%
Innovia Films, Inc.	Tecumseh, KS	10,500	29,300	19%
Viscofan USA, Inc.	Danville, IL	8,800	24,600	16%
All other carbon disulfide releases in the OCPSF Category <sup>a</sup>		1,550	4,340	3%
<b>Total</b>		<b>56,200</b>	<b>157,000</b>	<b>100%</b>

Source: *TRILTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Seven additional facilities reported carbon disulfide releases in the 2013 TRI.

#### **Viskase Corporation**

The Viskase Corporation in Loudon, TN, is a food casings manufacturer, one of two facilities operated by Viskase Corporation, the world’s largest producer of small-sized food casings (U.S. EPA, 2011b). Viskase Corporation’s reported indirect releases of carbon disulfide account for 63 percent of the 2013 TRI OCPSF carbon disulfide TWPE. As shown in Table 3-96 below, releases reported in 2012 and 2013 are substantially greater than releases reported from 2008 through 2011.

EPA reviewed 2006 through 2009 indirect releases from Viskase Corporation in 2011 as part of its *Preliminary Study of Carbon Disulfide Discharges from Cellulose Products Manufacturers* (U.S. EPA, 2011b). Specifically, EPA contacted Viskase Corporation and the local pretreatment coordinator to confirm the carbon disulfide releases. At the time, EPA determined that the majority of the carbon disulfide concentrations measured at the POTW influent did not exceed the industrial user permit limit for carbon disulfide of 5 mg/L. More

importantly, the concentrations reviewed were prior to treatment through the receiving POTW. EPA determined that the carbon disulfide concentrations in the POTW effluent following treatment are likely below levels of detection, and are likely no concern to human health and aquatic life. See Section 5.2 of EPA's *Preliminary Study of Carbon Disulfide Discharges from Cellulose Products Manufacturers* for more information (U.S. EPA, 2011b).

Similar to its 2007 through 2011 releases, the facility reported that the 2012 and 2013 releases are based on periodic or random monitoring data or measurements. As part of the 2015 Annual Review, EPA made several attempts to contact Viskase Corporation to confirm the findings from its 2011 preliminary study and understand why the carbon disulfide releases increased by an order of magnitude from 2011 to 2012, and then nearly doubled in 2013, but the facility did not respond to the requests (Yoder, 2014). Based on conclusions from the 2011 preliminary study, EPA determined that the carbon disulfide discharges volatilize and likely do not pass through to the POTW effluent.

**Table 3-96. Viskase Corporation Carbon Disulfide TRI Indirect Releases, 2007 – 2013**

Year	Total Indirect Pounds	Total Indirect TWPE
2007	428	1,200
2008	1,920	5,380
2009	2,080	5,820
2010	2,080	5,820
2011	1,920	5,380
2012	19,000	53,300
2013	35,400	99,000

Source: *TRILTOOutput2013\_v1*; DMR Loading Tool.

#### ***Innovia Films, Inc.***

Innovia Films, Inc., in Tecumseh, KS, manufactures cellophane used primarily in food packaging. Innovia reported direct releases of carbon disulfide accounting for 19 percent of the 2013 TRI OCPSF carbon disulfide TWPE. Reported TRI releases from the facility peaked in 2009, decreased in 2010, and were relatively consistent between 2010 and 2013 (as shown in Table 3-97). The facility reported that 2007 through 2013 TRI release estimates are based on periodic or random monitoring data or measurements. The facility also has a NPDES permit (KS0003204) and reports carbon disulfide releases on DMRs. Table 3-97 shows a comparison of the TRI and DMR discharge data for 2007 through 2013. As shown in the table, TRI releases have remained fairly consistent from 2010 through 2013, while DMR discharges have significantly decreased. Therefore, EPA is unsure of the representativeness of the facility's carbon disulfide releases reported to TRI.

EPA reviewed the facility's NPDES permit as part of the *Preliminary Study of Carbon Disulfide Discharges from Cellulose Products Manufacturers* (U.S. EPA, 2011b). From this review, EPA determined that the facility recovers volatilized carbon disulfide, a valuable feedstock, using steam. Some carbon disulfide is captured in the steam condensate and is transferred to the wastewater treatment system. At this facility, the sampling point is more than one mile away from the wastewater treatment system's final discharge point. As a result, during the study EPA determined that the concentration of carbon disulfide entering the surface water is likely lower than sampled because of this distance and volatilization (U.S. EPA, 2011b). The

TRI releases have declined slightly since the 2011 preliminary study, while the DMR discharges have decreased substantially since the 2011 preliminary study, and the actual concentration of carbon disulfide entering the surface water is likely lower than measured by sampling (because of the distance between sampling and outfall, and volatilization).

**Table 3-97. Innovia Films Inc. Carbon Disulfide DMR and TRI Releases, 2007 – 2013**

Year	Total TRI Pounds	DMR Pounds
2007	5,440	No data available
2008	19,900	12,900
2009	26,500	28,200
2010	10,500	10,200
2011	14,000	7,130
2012	11,000	2,380
2013	10,500	973

Source: *TRILTOOutput2013\_v1*; *DMRLTOOutput2013\_v1*; DMR Loading Tool.

### ***Viscofan USA, Inc.***

Viscofan USA, Inc., in Danville, IL, manufactures food casings. The facility reported indirect releases of carbon disulfide accounting for 16 percent of the 2013 TRI OCPSF carbon disulfide TWPE. Table 3-98 presents the facility’s carbon disulfide TRI releases from 2007 through 2013. The facility reported that their TRI release estimates are based on periodic or random monitoring data or measurements, but has not responded to EPA’s requests for confirmation and details (Webster, 2014). The facility has an active NPDES permit, but does not monitor for carbon disulfide. The reported releases of carbon disulfide from Viscofan USA are to POTWs. Similar to the findings discussed for Viskase above, EPA determined that the carbon disulfide discharges volatilize and likely do not pass through to the POTW effluent.

**Table 3-98. Viscofan USA, Inc. Carbon Disulfide TRI Indirect Releases, 2007 – 2013**

Year	Total Indirect Pounds	Total Indirect TWPE
2007	1,600	4,480
2008	3,840	10,800
2009	2,240	6,270
2010	9,280	26,000
2011	7,880	22,100
2012	9,920	27,800
2013	8,800	24,600

Source: *TRILTOOutput2013\_v1*; DMR Loading Tool.

### **3.10.8 OCPSF Category Nitrate Compounds Releases in TRI**

EPA’s investigation of the nitrate compounds releases revealed that two facilities, DSM Chemicals NA, Inc., in Augusta, GA, and DuPont Chambers Works, in Deepwater, NJ, together account for 38 percent of the 2013 TRI nitrate compounds releases (as shown in Table 3-99 below). EPA did not conduct facility-level reviews for any of the remaining 119 facilities releasing nitrate compounds in TRI as part of the 2015 Annual Review because none of them contributes more than 1,000 TWPE to the total nitrate TRI TWPE for the OCPSF Category.

**Table 3-99. Top Facilities Reporting 2013 TRI Nitrate Compound Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
DSM Chemicals NA, Inc.	Augusta, GA	4,390,000	3,280	25%
DuPont Chambers Works	Deepwater, NJ	2,320,000	1,730	13%
All other nitrate compound releases in the OCPSF Category <sup>a</sup>		11,000,000	8,220	62%
<b>Total</b>		<b>17,700,000</b>	<b>13,200</b>	<b>100%</b>

Source: *TRILTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 119 additional facilities reported nitrate compound releases in the 2013 TRI.

### ***DSM Chemicals NA, Inc.***

DSM Chemicals NA, Inc. produces caprolactum, a monomer used to make nylon fibers. As part of the 2015 Annual Review, EPA contacted DSM Chemicals NA about its 2013 TRI nitrate compounds releases (Connell, 2015). Most of the nitrate releases are generated at the facility’s on-site wastewater treatment plant. Oxidation of organic raw materials during production of caprolactum forms ammonia and nitrites. These nitrogen compounds are then oxidized to nitrate compounds by nitrification in the wastewater treatment plant.

The facility estimated the TRI releases based on monitoring data. The facility samples wastewater three times a week from the wastewater treatment plant effluent and calculates a monthly average nitrate concentration. The facility multiplies the monthly nitrate average concentration by the average monthly flow to determine the annual pounds of nitrate compounds released (Connell, 2015). As shown in Table 3-100, the facility’s nitrate compound TRI releases have been fairly similar from 2010 through 2013.

**Table 3-100. DSM Chemicals NA, Inc. Nitrate Compound TRI Releases, 2010 – 2013**

Year	Pounds of Nitrate Compounds Released	Nitrate TWPE
2010	4,510,000	3,370
2011	5,220,000	3,900
2012	4,080,000	3,050
2013	4,390,000	3,280

Source: *TRILTOOutput2013\_v1*; DMR Loading Tool.

### ***DuPont Chambers Works***

DuPont Chambers Works manufactures hundreds of intermediate products for automotive, consumer, and agricultural uses at five different units at its Deepwater, NJ site (Young, 2014), and releases nitrate compounds directly to surface waters. As part of the 2015 Annual Review, EPA contacted DuPont Chambers Works about its 2013 TRI nitrate compounds releases (Northey, 2015). The facility estimated nitrate releases based on mass balance calculations. The facility samples the final effluent for nitrate compounds weekly, using EPA method 300.0. The facility subtracts the source water nitrate concentration from the effluent

concentration to get the net concentration contributed by its industrial activity. Nitrate was detected in all 2013 samples (Northey, 2015).

As shown in Table 3-101, the facility's nitrate compounds releases in 2012 and 2013 are about half of the levels reported in 2007 through 2011. According to the facility contact, the decrease in releases was due to process changes on site, resulting in decreased nitrogen loading to the facility's wastewater treatment plant (Northey, 2015).

**Table 3-101. DuPont Chambers Works Nitrate Compounds TRI Releases, 2010 – 2013**

Year	Pounds of Nitrate Compounds Released	Nitrate TWPE
2007	4,110,000	3,070
2008	5,310,000	3,970
2009	3,210,000	6,430
2010	4,400,000	3,290
2011	4,260,000	3,180
2012	2,460,000	1,840
2013	2,320,000	1,730

Source: *TRILTOOutput2013\_v1*; DMR Loading Tool.

The individual facility TWPE associated with nitrate discharges across the OCPSF Category appears to be relatively low (less than 3,300); however, a large number of facilities reported nitrate compound release to TRI in 2013.

### 3.10.9 OCPSF Category Findings

The estimated toxicity of the OCPSF Category discharges resulted primarily from PACs, total residual chlorine, hexachlorobenzene, and dioxin discharges reported on DMRs, and PACs, dioxin and dioxin-like compound, carbon disulfide, and nitrate compound releases reported to TRI. From the 2015 Annual Review, EPA found:

- **PACs.** Two facilities, Honeywell, in Hopewell, VA, and E. I. DuPont de Nemours, in Washington, WV, account for 94 percent of the 2013 DMR benzo[a]pyrene and benzo[k]fluoranthene discharges. Additionally, two facilities, Sasol, in Westlake, LA, and ExxonMobil, in Baytown, TX, account for 96 percent of the 2013 TRI PACs releases. The results of EPA's review of PACs discharges were:
  - EPA confirmed that the DMR benzo[a]pyrene and benzo[k]fluoranthene discharges for Honeywell and E. I. DuPont de Nemours were below detection and should be corrected to zero. Incorporating this correction decreases the OCPSF benzo[a]pyrene TWPE from 59,800 to 3,230, and the benzo[k]fluoranthene TWPE from 18,200 to 971.
  - Sasol, in Westlake, LA, is a top facility for 2013 TRI PACs releases. The facility has a NPDES permit, which sets limits for the discharge of five PACs. The TRI data were based on monitoring data for the facility's NPDES permit. The facility is currently meeting its PACs permit limits. In addition, the facility plans to expand from 2015 through 2018, and their revised 2014 NPDES permit has four

phases of increasingly stringent pollutant limits that the facility must meet as construction progresses.

- A facility contact at ExxonMobil, in Baytown, TX, confirmed their 2013 TRI PACs release and stated that the facility based its calculations on conservative estimates of PACs concentrations and that it is not likely that PACs are actually present. As a result, the facility plans to report zero PACs wastewater releases to TRI in future years. Based on the information provided by the facility contact, EPA expects a decrease in PACs releases reported to TRI from this facility.
- For the reasons identified above, EPA has determined that PACs releases for the OCPSF Category do not represent a hazard priority at this time.
- **Total Residual Chlorine.** Total residual chlorine is not a regulated pollutant under the OCPSF ELGs. Ninety-seven facilities submitted DMRs with total residual chlorine discharges in 2013; four facilities account for over 60 percent of those discharges. EPA reviewed the DMR data submitted by the top four facilities and found that all four met their permit limits in 2013. In addition, EPA found that three of the facilities had minimum chlorine permit limits. EPA did not conduct a facility-level review of the total residual chlorine discharges for the remaining 93 facilities because no facility individually contributed more than 5,000 TWPE. However, EPA notes that large number of facilities (97 facilities) reported total residual chlorine discharges on DMRs in 2013 and three of the top four facilities reporting total residual chlorine discharges have minimum total residual chlorine limits in their permits.
- **Hexachlorobenzene.** Two facilities, Sasol, in Westlake, LA, and Nalco Company, in Garyville, LA, account for 93 percent of the 2013 DMR hexachlorobenzene discharges. EPA determined that hexachlorobenzene discharges from Sasol will likely continue to decrease due to the implementation of more stringent permit limits. Nalco Company's hexachlorobenzene discharges are also below its current permit limits. As a result, EPA determined that hexachlorobenzene discharges for the OCPSF Category do not represent a hazard priority at this time.
- **Dioxin.** One facility, Solutia, in Nitro, WV, accounts for over 99 percent of the 2013 DMR TCDD discharges. Two facilities, Sasol, in Westlake, LA, and Dow Chemical, in Midland, MI, account for 93 percent of the 2013 TRI dioxin and dioxin-like compound releases. EPA reviewed the dioxin discharges and found the following:
  - The facility contact at Solutia stated that the facility is implementing remediation activities under a RCRA permit, which includes capping and covering areas with TCDD-affected soils, and pumping and treating groundwater from the affected area on site. TCDD discharges at the site have decreased from 2013 to 2014; the facility expects that the TCDD discharges will cease with the completion of remediation activities, scheduled for summer 2015.
  - EPA identified a data correction for the TRI dioxin and dioxin-like compound releases from Sasol, decreasing the OCPSF category dioxin and dioxin-like compound TRI TWPE from 69,700 to 22,500.
  - The facility contact at Dow Chemical confirmed the 2013 TRI dioxin and dioxin-like compound release data, and stated that the dioxin and dioxin-like compound

releases are from historical processes and waste management units that are no longer in operation at the site.

- For the reasons identified above, EPA has determined that dioxin discharges for the OCPSF Category do not represent a hazard priority at this time.
- **Carbon Disulfide.** Three cellulose products manufacturing facilities, Viskase Corporation, in Loudon, TN, Innovia Films Inc., in Tecumseh, KS, and Viscofan USA Inc., in Danville, IL, account for 97 percent of the 2013 TRI carbon disulfide releases. EPA reviewed the carbon disulfide releases and found the following:
  - EPA reviewed indirect carbon disulfide releases from Viskase Corporation in 2011, as part of the *Preliminary Study of Carbon Disulfide Discharges from Cellulose Products Manufacturers*. Consistent with previous findings, EPA determined that the carbon disulfide discharges likely do not pass through to the POTW effluent.
  - EPA reviewed Innovia Films, Inc.'s NPDES permit in 2011, as part of the *Preliminary Study of Carbon Disulfide Discharges from Cellulose Products Manufacturers*. At the time, EPA determined that the concentration of carbon disulfide entering the surface water is likely lower than sampled because of additional volatilization over the long distance between the sampling point and the wastewater treatment system final discharge point. TRI carbon disulfide discharges at the facility have remained stable from 2010 to 2013, and DMR discharges have decreased substantially from 2010 to 2013; therefore, EPA has continued to find that 2013 TRI discharges are likely lower than sampled.
  - As was the case for Viskase, the reported releases of carbon disulfide from Viscofan USA, Inc., are to POTWs. EPA determined that the carbon disulfide discharges likely do not pass through to the POTW effluent.
  - Only ten facilities reported TRI carbon disulfide releases in 2013 and three constituted 97 percent of the releases (two of these discharge indirectly to POTWs). EPA does not consider the carbon disulfide releases to be representative of the OCPSF category.
- **Nitrate.** One hundred twenty-one facilities reported releases of nitrate compounds to TRI in 2013; two facilities, DSM Chemicals NA, Inc., in Augusta, GA, and DuPont Chambers Works, in Deepwater, NJ, account for 38 percent of those releases. EPA confirmed that both facilities base their nitrate compound TRI releases on monitoring data. DSM Chemical's TRI nitrate releases have remained fairly similar from 2010 through 2013, while DuPont Chambers Works' TRI nitrate compound releases have decreased from 2010 through 2013. EPA did not conduct a facility-level review of the remaining 119 facilities with reported TRI nitrate compound releases in 2013, as the majority contribute less than 1,000 TWPE each. However, EPA notes that a large number of facilities (121 facilities) reported nitrate compound releases to TRI in 2013.

#### 3.10.10 OCPSF Category References

1. Brewer, Kevin. 2015. Telephone and Email Communication Between Kevin Brewer, ExxonMobil Chemical Co., and Eva Knoth, Eastern Research Group,

- Inc., Re: 2013 TRI PACs Releases from ExxonMobil Chemical Co. in Baytown, TX. (May 7). EPA-HQ-OW-2015-0665. DCN 08171.
2. Connell, Elizabeth. 2015. Telephone and Email Communication Between Elizabeth Connell, DSM Chemicals NA, Inc., and Eva Knoth, Eastern Research Group, Inc., Re: 2013 TRI Nitrate Releases from DSM Chemicals NA, Inc., Augusta, GA. (May 7). EPA-HQ-OW-2015-0665. DCN 08172.
  3. ERG. 2015. Preliminary Category Review – Facility Data Review for Point Source Category – 414 – Organic Chemicals, Plastics, and Synthetic Fibers. (September). EPA-HQ-OW-2015-0665. DCN 08173.
  4. House, Michael. 2014. Telephone and Email Communication Between Michael House, A.K.A Solutia, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR 2,3,7,8-TCDD Discharges for A.K.A Solutia Nitro Site. (December 18). EPA-HQ-OW-2015-0665. DCN 08174.
  5. Kennett, Shari. 2015. Telephone and Email Communication Between Shari Kennett, Dow Chemical, and Eva Knoth, Eastern Research Group, Inc., Re: 2013 TRI Dioxin Releases from Dow Chemical Co., Midland, MI. (May 8). EPA-HQ-OW-2015-0665. DCN 08175.
  6. LA DEQ. 2009a. Louisiana Department of Environmental Quality. *NPDES Permit: Sasol North America, Westlake, LA (LA0003336)*. (November 13). EPA-HQ-OW-2015-0665. DCN 08176.
  7. LA DEQ. 2009b. Louisiana Department of Environmental Quality. *NPDES Permit: Nalco Company, Garyville, LA (LA0038890)*. (March 10). EPA-HQ-OW-2015-0665. DCN 08177.
  8. LA DEQ. 2014. Louisiana Department of Environmental Quality. *NPDES Permit: Sasol North America, Westlake, LA (LA0003336)*. (April 29). EPA-HQ-OW-2015-0665. DCN 08178.
  9. Northey, Scott. 2015. Telephone and Email Communication Between Scott Northey, DuPont Chambers Works, and Eva Knoth, Eastern Research Group, Inc., Re: 2013 TRI Nitrate Releases from DuPont Chamber Works, Deepwater, NJ. (May 7). EPA-HQ-OW-2015-0665. DCN 08179.
  10. Sasol. 2015. Sasol North American Operations. Lake Charles Chemical Complex and R&D. EPA-HQ-OW-2015-0665. DCN 08180.
  11. Shaw, Scott. 2014. Telephone and Email Communication Between Scott Shaw, Sasol North America, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Dioxin Discharges for Sasol. (December 23). EPA-HQ-OW-2015-0665. DCN 08181.



12. U.S. EPA. 2004. *Technical Support Document for the 2004 Effluent Guidelines Program Plan*. Washington, D.C. (August). EPA-821-R-04-014. EPA-HQ-OW-2003-0074-1346 through 1352.
13. U.S. EPA. 2005a. *Preliminary 2005 Review of Prioritized Categories of Industrial Dischargers*. Washington, D.C. (August). EPA-821-B-05-004. EPA-HQ-OW-2004-0032-0016.
14. U.S. EPA. 2005b. *Product and Product Group Discharges Subject to Effluent Limitations and Standards for the Organic Chemicals, Plastics, and Synthetic Fibers Point Source Category*. Washington, D.C. (April). EPA-HQ-OW-2004-0032-2568.
15. U.S. EPA. 2006. *Technical Support Document for the 2006 Effluent Guidelines Program Plan*. Washington, D.C. (December). EPA-821-R-06-018. EPA-HQ-OW-2004-0032-2782.
16. U.S. EPA. 2007. *Technical Support Document for the Preliminary 2008 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-821-R-07-007. EPA-HQ-OW-2006-0771-0819.
17. U.S. EPA. 2008. *Technical Support Document for the 2008 Effluent Guidelines Program Plan*. Washington, D.C. (August). EPA-821-R-08-015. EPA-HQ-OW-2006-0771-1701.
18. U.S. EPA. 2009. *Technical Support Document for the Preliminary 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-821-R-09-006. EPA-HQ-OW-2008-0517-0514.
19. U.S. EPA. 2011a. *Technical Support Document for the 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-820-R-10-021. EPA-HQ-OW-2008-0517-0618.
20. U.S. EPA. 2011b. *Preliminary Study of Carbon Disulfide Discharges from Cellulose Products Manufacturers*. Washington, D.C. (December). EPA-821-R-11-009. EPA-HQ-OW-2015-0665. DCN 08182.
21. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.
22. U.S. EPA. 2014. *The 2013 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA 821-R-14-003. EPA-HQ-OW-2014-0170-0077.
23. U.S. EPA. 2016. *Preliminary 2016 Effluent Guidelines Program Plan*. Washington, D.C. (June). EPA-821-R-16-001. EPA-HQ-OW-2015-0665. DCN 08208.

24. VA DEQ. 2008. Virginia Department of Environmental Quality. *NPDES Permit: Honeywell International, Inc., Hopewell, VA*. (September 30). EPA-HQ-OW-2014-0170-0033.
25. Webster, Jack. 2014. Telephone Communication Between Jack Webster, Viscofan USA, Inc., and Elizabeth Gentile, Eastern Research Group, Inc., Re: 2013 TRI Carbon Disulfide Discharges from Viscofan USA, Inc. (December). EPA-HQ-OW-2015-0665. DCN 08183.
26. Yoder, Michael. 2014. Telephone and Email Communication Between Michael Yoder, Viskase Corporation, and Elizabeth Gentile, Eastern Research Group, Inc., Re: 2013 TRI Carbon Disulfide Discharges from Viskase Corp. (December). EPA-HQ-OW-2015-0665. DCN 08184.
27. Young, Alex. 2014. *New DuPont Chambers Works plant manager ready to take on big change*. South Jersey Times. (December). EPA-HQ-OW-2015-0665. DCN 08185.

### **3.11 Pulp, Paper, and Paperboard (40 CFR Part 430)**

EPA identified the Pulp, Paper, and Paperboard (Pulp and Paper) Category for preliminary review because it ranks high again, in terms of toxic-weighted pound equivalents (TWPE), in the final 2015 combined point source category rankings. Previously, EPA reviewed discharges from this category as part of the Preliminary and Final Effluent Guidelines Program Plans in 2004–2013 in which it also ranked high (U.S. EPA, 2004, 2006a, 2007, 2008, 2009a, 2011, 2012, 2014a, and 2014b). During its 2006 Effluent Guidelines Program Plan development, EPA also conducted a detailed study of this industry (U.S. EPA, 2006b).

This section summarizes the results of the 2015 Annual Review. EPA focused its 2015 review on discharges of hydrogen sulfide, dioxin and dioxin-like compounds, and manganese and manganese compounds because of their high TWPE relative to other pollutants discharged by facilities in the Pulp and Paper Category. Dioxin and dioxin-like compounds and manganese and manganese compounds, reviewed as part of the 2013 Annual Review, continue to be top pollutants of concern. Hydrogen sulfide was added as a Toxic Release Inventory (TRI) reporting requirement in 2012. As a result, in 2013, hydrogen sulfide contributed a substantial amount of TWPE for the category. Therefore, for the 2015 Annual Review, available discharge data showed substantial contributions of hydrogen sulfide to the Pulp and Paper Category TWPE.

#### **3.11.1 Pulp and Paper Category 2015 Toxicity Rankings Analysis**

Table 3-102 compares the toxicity rankings analyses (TRA) data for the Pulp and Paper Category from the 2011, 2013, and 2015 Annual Reviews. EPA did not conduct the TRA in 2012 or 2014, but instead reviewed additional data sources as part of the even-year annual review, as described in Section 2.2.1 of EPA's Preliminary 2016 Plan (U.S. EPA, 2016). As discussed in this section, during the 2015 Annual Review, EPA identified a data correction that affected the 2013 TRI data and TWPE. The bottom row of Table 3-102 shows both the original data and the corrected data resulting from this review.

**Table 3-102. Pulp and Paper Category TRI and DMR Facility Counts and Discharges Reported for 2009, 2011, and 2013**

Year of Discharge	Year of Review	Pulp and Paper Category Facility Counts <sup>a</sup>			Pulp and Paper Category TWPE		
		Total of TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities	TRI TWPE <sup>b</sup>	DMR TWPE <sup>c</sup>	Total
2009	2011	250	137	20	1,080,000	260,000 <sup>d</sup>	1,340,000
2011	2013	219	130	24	651,000	576,000 <sup>e</sup>	1,230,000
2013	2015	226	110	16	2,750,000 <sup>f</sup>	321,000	3,070,000 <sup>f</sup>
					1,820,000 <sup>g</sup>		2,140,000 <sup>g</sup>

Sources: 2013 Annual Review Report (for 2009 and 2011 DMR and TRI Data) (U.S. EPA, 2014);

*DMRLTOOutput2013\_v1* (for 2013 DMR); *TRILTOOutput2013\_v1* (for 2013 TRI).

Note: EPA did not evaluate 2010 or 2012 DMR and TRI data

Note: TWPE values are rounded to three significant figures. Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Number of facilities with TWPE greater than zero.

<sup>b</sup> Releases include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals. The 2013 TRI TWPE also includes TWPE associated with reported releases of hydrogen sulfide. Facilities began reporting releases of hydrogen sulfide to TRI in 2012.

<sup>c</sup> Includes DMR data from both major and minor dischargers.

<sup>d</sup> 2009 data after corrections were made during the 2011 Annual Review.

<sup>e</sup> 2011 data after corrections were made during the 2013 Annual Review.

<sup>f</sup> 2013 data prior to corrections made during the 2015 Annual Review.

<sup>g</sup> 2013 data after corrections were made during the 2015 Annual Review.

As shown in Table 3-102, the TRI TWPE decreased from 2009 to 2011, then increased substantially from 2011 to 2013 while the number of facilities reporting releases to TRI decreased from 2009 to 2013. The total number of facilities submitting discharge monitoring reports (DMRs) decreased from 2009 to 2013, the DMR TWPE increased from 2009 to 2011 and decreased from 2011 to 2013. The increase in TRI TWPE from 2011 to 2013 can be attributed to new requirements for reporting hydrogen sulfide releases, discussed in the sections below.

### 3.11.2 Pulp and Paper Category Pollutants of Concern

EPA’s 2015 review of the Pulp and Paper Category focused on the 2013 TRI releases because the TRI data dominate the category’s combined TWPE. Table 3-103 shows the five pollutants with the highest contribution to the 2013 TRI TWPE. Table 3-103 also presents the 2013 TRI TWPE after EPA corrected an error identified in this preliminary category review (discussed in the sections below). As a point of comparison, Table 3-103 also shows the 2011 TRI facility count and TWPE for these top five pollutants, based on the 2013 Annual Review (U.S. EPA, 2014). Because hydrogen sulfide was added as a TRI reporting requirement in 2012, no hydrogen sulfide releases were reported in 2011.

Hydrogen sulfide, dioxin and dioxin-like compounds, and manganese and manganese compounds contribute over 92 percent of the original 2013 TRI TWPE for the Pulp and Paper Category (prior to corrections discussed below). Sections 3.11.3 through 3.11.5 present EPA’s investigation of reported TRI releases of the top three pollutants. EPA did not conduct a facility-level investigation of lead and lead compounds and mercury and mercury compounds, as part of the 2015 Annual Review, because they account for less than 4 percent of the total TRI TWPE.

However, many facilities report lead and lead compound and mercury and mercury compound releases to TRI and individually their TWPE is over 45,000, as shown in Table 3-103.

**Table 3-103. Pulp and Paper Category Top TRI Pollutants**

Pollutant <sup>a</sup>	2013 TRI Data			2011 TRI Data	
	Number of Facilities Reporting Pollutant <sup>b</sup>	Original TWPE	Corrected TWPE	Number of Facilities Reporting Pollutant <sup>b</sup>	TWPE
Hydrogen Sulfide	98	1,190,000	1,190,000	NA <sup>c</sup>	NA <sup>c</sup>
Dioxin and Dioxin-Like Compounds	42	1,090,000	158,000	38	238,000
Manganese and Manganese Compounds	112	318,000	318,000	104	266,000
Lead and Lead Compounds	172	47,700	47,700	157	48,000
Mercury and Mercury Compounds	84	46,500	46,500	81	52,700
<b>Top Pollutant Total</b>	<b>NA</b>	<b>2,690,000</b>	<b>1,760,000</b>	<b>NA</b>	<b>605,000</b>
<b>Pulp and Paper Category Total</b>	<b>226</b>	<b>2,750,000</b>	<b>1,820,000</b>	<b>219</b>	<b>651,000</b>

Sources: *TRILTOOutput2011\_v1*; *TRILTOOutput2013\_v1*

Note: Sums of individual values may not equal the total presented, due to rounding.

NA: Not applicable.

<sup>a</sup> Lead and lead compound and mercury and mercury compound releases combined contribute less than 5 percent of the original 2013 category TRI TWPE. Therefore, EPA did not review releases of either pollutant as part of the 2015 Annual Review.

<sup>b</sup> Number of facilities with TWPE greater than zero.

<sup>c</sup> Hydrogen sulfide was added as a TRI reporting requirement in 2012; it was not a TRI-listed chemical in 2011.

### 3.11.3 Pulp and Paper Category Hydrogen Sulfide Releases in TRI

EPA’s investigation of the hydrogen sulfide data revealed that seven facilities account for 80 percent of the hydrogen sulfide releases reported to TRI in 2013 (shown in Table 3-104). EPA investigated the top facility, which accounts for more than a quarter of the total hydrogen sulfide releases and double the releases reported by any of the other top reporting facilities. EPA did not review in further detail the hydrogen sulfide releases for the remaining 97 pulp and paper mills as part of the 2015 Annual Review, but instead focused on understanding the presence, fate, and concentrations of hydrogen sulfide in pulp and paper mill effluents.

**Table 3-104. Top Facilities Reporting 2013 TRI Hydrogen Sulfide Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
Georgia-Pacific, Monticello	Monticello, MS	115,000	323,000	27.2%
Rocktenn	Stevenson, AL	50,600	142,000	11.9%
Alabama River Cellulose LLC	Perdue Hill, AL	45,800	128,000	10.8%
Brunswick Cellulose, Inc.	Brunswick, GA	45,300	127,000	10.7%
Rayonier Performance Fibers Jesup Mill	Jesup, GA	34,600	97,000	8.2%
Georgia-Pacific, Cedar Springs LLC	Cedar Springs, GA	34,000	95,300	8.0%
Georgia-Pacific, Toledo LLC	Toledo, OR	16,100	45,100	3.8%
All other hydrogen sulfide dischargers in the Pulp and Paper Category <sup>a</sup>		82,100	230,000	19.4%
<b>Total</b>		<b>424,000</b>	<b>1,190,000</b>	<b>100%</b>

Source: *TRILTOOutput2013\_v1*

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 91 additional facilities reported hydrogen sulfide releases in the 2013 TRI.

As part of the 2015 Annual Review, EPA contacted the American Forest and Paper Association (AF&PA) and the National Council for Air and Stream Improvement (NCASI). AF&PA is the national trade association of the forest, pulp, paper, paperboard, and wood products industry. NCASI is a nonprofit research institute funded by the North American forest products industry, including pulp and paper facilities. AF&PA and NCASI provided information on the presence, fate, and concentrations of hydrogen sulfide in pulp and paper mill effluents. Hydrogen sulfide, one of several forms of reduced sulfur, can occur in pulp and paper mill wastewater primarily from two processes: 1) the use and recovery of sulfur-containing pulping liquors; and 2) biological reduction of sulfate or other oxidized sulfur species in wastewater collection or treatment systems. Because most wastewater treatment systems in the forest products industry use aerobic biological treatment, AF&PA and NCASI suggested that high concentrations of hydrogen sulfide do not occur at pulp and paper mills that properly treat their wastewater. However, according to AF&PA and NCASI, it is possible for trace levels of hydrogen sulfide to be present in some treated effluents. Available data from four pulp mills using aerobic treatment showed hydrogen sulfide removal rates greater than 98 percent, mostly due to oxidation in the wastewater treatment system (Wiegand, 2015).

NCASI collected wastewater samples at 25 pulp and paper mills in the U.S. and Canada for total sulfide concentrations and published the results in 2012 in an NCASI Technical Bulletin (NCASI, 2012; Wiegand 2015). The mills were not a random sample, but were chosen because they had experienced odor-related issues in which sulfide may have been a factor. Therefore, the data represent mills with potentially higher concentrations of sulfide in their wastewater than are likely to be found in the category as a whole. The samples were analyzed using NCASI Method RSC-02.02, which uses direct aqueous injection gas chromatography with a pulsed flame photometric detector. This method measures the concentration of total sulfide in the sample that is volatile at pH 2.5. The data showed that biologically treated final effluent concentrations of total sulfide ranged from non-detect to 0.29 mg/L, with an average concentration of 0.10 mg/L.

Six of the 25 mills sampled had non-detect total sulfide concentrations in their effluent (Wiegand, 2015).

NCASI indicated that measuring low concentrations of hydrogen sulfide is challenging due to its absorptive, adsorptive, photo reactive, volatile, biologically active, and oxidative properties. The hydrogen sulfide data collected for the 25 pulp and paper mills discussed above were based on measurements of total sulfide, as hydrogen sulfide is difficult to measure due to dependencies on pH, temperature, ionic strength, and organic and inorganic complexes. NCASI noted that hydrogen sulfide concentrations in treated mill effluents will be less than total sulfide concentrations, in part due to the likely presence of metal and organic sulfide complexes disassociated during the analytical procedure. In addition, pulp and paper mills typically operate biological treatment plants at a neutral pH of 7, higher than the 2.5 pH at which volatile sulfides are measured by the method described above. Due to these factors, NCASI has suggested that the hydrogen sulfide releases identified in its 2012 report of treated mill effluents may be an overestimate. NCASI also indicated that mills are likely using similar methods to estimate their TRI releases, resulting in estimates reported to TRI that are potentially overestimated (NCASI, 2012; Wiegand, 2015).

In 2015, NCASI developed a new sampling system that may allow measurement of dissolved sulfides in water samples (i.e., sulfide forms passing through a 0.7  $\mu\text{m}$  filter), rather than total sulfides. Because the hydrogen sulfide in effluents is dissolved, accurately measuring dissolved sulfides is more likely to produce a close approximation of actual hydrogen sulfide concentrations than measuring total sulfide. AF&PA and NCASI believe that the new sampling system will mitigate overestimates of hydrogen sulfide concentrations in TRI data (Wiegand, 2015).

As part of the 2015 Annual Review, and to follow up on the specific hydrogen sulfide release data reported to TRI in 2013, AF&PA and NCASI also contacted the Georgia-Pacific mill in Monticello, MS, to discuss their hydrogen sulfide releases. This mill reported the largest releases of hydrogen sulfide in 2013, accounting for more than a quarter of the total hydrogen sulfide releases reported to TRI in 2013 and double the releases reported by any of the other top reporting facilities. The mill confirmed their 2013 TRI hydrogen sulfide release, and stated that this value was based on a direct total sulfide concentration measurement of the treated effluent at the facility. Since 2013, the facility has improved their wastewater treatment system by dredging treatment basins of accumulated solids to increase the available aeration zone, and releases decreased to 32,000 pounds (89,900 TWPE) per year in 2014 (Schwartz and Wiegand, 2014). This value is consistent with the hydrogen sulfide releases reported by the other top reporting facilities. EPA did not review in further detail the hydrogen sulfide releases for the remaining 97 pulp and paper mills, which account for 73 percent of the 2013 TRI hydrogen sulfide releases.

In summary, as discussed above, in 2013, pulp and paper mills may have calculated their hydrogen sulfide releases to TRI using a total sulfide concentration and, according to AF&PA and NCASI, this results in an overestimate. EPA has determined these industry trade associations are actively evaluating discharges from pulp and paper mills and are working on refining methods to improve the accuracy of sampling techniques that will enhance the quality of data reported to TRI in the future.

### 3.11.4 Pulp and Paper Category Dioxin and Dioxin Compound Releases in TRI

EPA’s investigation of the dioxin and dioxin compound data revealed that five facilities account for 93 percent of the dioxin and dioxin-like compound releases reported to TRI in 2013 (shown in Table 3-105). EPA did not investigate the remaining facilities reporting releases of dioxin and dioxin-like compounds as part of the 2015 Annual Review.

**Table 3-105. Top Facilities Reporting 2013 TRI Dioxin and Dioxin-Like Compounds Releases**

Facility Name	Facility Location	Pounds of Pollutant Released	Pollutant TWPE	Percent of Category TWPE
International Paper Pine Hill Mill	Pine Hill, AL	0.00758	683,000	62.8%
Domtar Paper Co.	Bennettsville, SC	0.00194	226,000	20.7%
Boise White Paper LLC	Wallula, WA	0.000274	52,800	4.8%
Rayonier Performance Fibers LLC	Fernandina Beach, FL	0.00270	31,100	2.9%
Resolute FP US Inc. – Calhoun Operations	Calhoun, TN	0.00133	21,900	2.0%
All other dioxin and dioxin-like compound dischargers in the Pulp and Paper Category <sup>a</sup>		0.103	74,100	6.8%
<b>Total</b>		<b>0.117</b>	<b>1,090,000</b>	<b>100%</b>

Source: *TRILTOOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> 37 additional facilities reported dioxin and dioxin-like releases in the 2013 TRI.

#### ***International Paper***

International Paper’s Pine Hill, AL, facility is a containerboard mill. EPA has not previously reviewed dioxin and dioxin-like compound releases from this facility. As part of the 2015 Annual Review, EPA contacted AF&PA and NCASI about this facility’s dioxin and dioxin-like compound releases. AF&PA and NCASI confirmed that the facility inadvertently reported an incorrect dioxin distribution (Schwartz and Wiegand, 2014). Correcting the distribution decreases the facility’s dioxin and dioxin-like compound TWPE from 683,000 to 480.

#### ***Domtar Paper***

As part of the 2011 and 2013 Annual Reviews, EPA reviewed the TRI dioxin and dioxin-like compound releases from Domtar Paper, in Bennettsville, SC, and determined that the number of pounds reported as released was based on one half of the detection limit and that dioxin was not actually detected at the mill. As described in Section 3.2.2.2 in EPA’s *Technical Support Document for the Annual Review of Existing Effluent Guidelines and Identification of Potential New Point Source Categories* (2009 Screening-Level Analysis (SLA) Report), EPA zeros the load for the purpose of its screening-level toxicity rankings analysis when all concentrations of a specific pollutant are reported as non-detected values for all monitoring periods (U.S. EPA, 2009b). Therefore, EPA zeroed the 2009 and 2011 TRI dioxin and dioxin-like compound releases for Domtar Paper (U.S. EPA, 2012 and 2014b). Table 3-106 presents



Domtar Paper's dioxin and dioxin-like compound TRI releases for 2009 through 2013. As shown, the 2013 release is similar to previous years. Therefore, without re-contacting the mill, EPA concluded that the 2013 reported dioxin and dioxin-like compound release was based on non-detected values. As in previously years, EPA zeroed Domtar Paper's 2013 dioxin and dioxin-like compound release.

**Table 3-106. Domtar Paper Dioxin and Dioxin-Like Compound Releases for 2009 – 2013**

Year	Pounds of Dioxin and Dioxin-Like Compounds Released	Dioxin and Dioxin-Like Compound TWPE
2009	0.002	225,000
2010	0.00195	232,000
2011	0.00196	228,000
2012	0.00195	232,000
2013	0.00194	226,000

Source: *TRILTOOutput2013\_v1*; DMR Loading Tool.

### ***Boise White Paper LLC***

EPA previously reviewed discharges from Boise White Paper LLC, in Wallula, WA, as part of the 2011, 2012, and 2013 Annual Reviews. As part of the 2011 and 2012 Annual Reviews, EPA reviewed 2009 TRI data and determined that the mill calculated dioxin releases using actual dioxin test results. EPA also determined that the facility detected concentrations of 2,3,7,8-TCDF above the Method 1613B Minimum Level (ML); however, the concentrations of all other detected congeners were below the method MLs. Since EPA does not know the laboratory specific MLs, it is possible that the results are below the laboratory's MLs and may not be accurate.

As part of the 2015 Annual Review, EPA contacted AF&PA and NCASI about Boise White Paper LLC's TRI dioxin and dioxin-like compound releases. The facility contact provided 2012 through 2014 effluent sampling data, shown in Table 3-107 (Schwartz and Wiegand, 2014). As shown, the detected concentrations are all below the corresponding method MLs. As noted above, since EPA does not know the laboratory specific MLs, it is possible that the results are below the laboratory's MLs and may not be accurate.

The facility contact also stated that the company instituted new reporting conventions in 2012. The changes to reporting conventions included using one half of the sample-specific detection limit when values were not detected. In previous reporting years, all non-detect values were reported as zero (Schwartz and Wiegand, 2014).

**Table 3-107. Boise White Paper LLC Dioxin and Dioxin-Like Compound Concentrations**

Dioxin Congener Number	Dioxin Congener	Method 1613B ML (pg/L)	2012 (pg/L)	2013 (pg/L)	2014 (pg/L)
1	2,3,7,8-TCDD	10	ND	ND	ND
2	1,2,3,7,8-PeCDD	50	ND	ND	ND
3	1,2,3,4,7,8-HxCDD	50	ND	ND	ND
4	1,2,3,6,7,8-HxCDD	50	ND	ND	ND
5	1,2,3,7,8,9-HxCDD	50	ND	ND	ND
6	1,2,3,4,6,7,8-HpCDD	50	14.5	ND	ND
7	1,2,3,4,6,7,8,9-OCDD	100	95.6	20.8	97.2

**Table 3-107. Boise White Paper LLC Dioxin and Dioxin-Like Compound Concentrations**

Dioxin Congener Number	Dioxin Congener	Method 1613B ML (pg/L)	2012 (pg/L)	2013 (pg/L)	2014 (pg/L)
8	2,3,7,8-TCDF	10	9.30	ND	7.03
9	1,2,3,7,8-PeCDF	50	3.24	ND	ND
10	2,3,4,7,8-PeCDF	50	5.48	ND	ND
11	1,2,3,4,7,8-HxCDF	50	ND	ND	ND
12	1,2,3,6,7,8-HxCDF	50	3.15	ND	ND
13	1,2,3,7,8,9-HxCDF	50	ND	ND	ND
14	2,3,4,6,7,8-HxCDF	50	ND	ND	ND
15	1,2,3,4,6,7,8-HpCDF	50	ND	ND	ND
16	1,2,3,4,7,8,9-HpCDF	50	ND	ND	ND
17	1,2,3,4,6,7,8,9-OCDF	100	ND	ND	ND
<b>Total</b>			<b>131</b>	<b>20.8</b>	<b>104</b>

Sources: Schwartz & Wiegand, 2014

ND: Non-detect results.

### ***Rayonier Performance Fibers***

EPA reviewed TRI dioxin and dioxin-like compound discharges from Rayonier Performance Fibers (Rayonier) in Fernandina Beach, FL, as part of the 2011, 2012, and 2013 Annual Reviews. From these earlier reviews, EPA confirmed that the mill bases its reported dioxin and dioxin-like compound discharges on quarterly measurements (U.S. EPA, 2012). Rayonier reported that they detected seven dioxin congeners in their effluent wastewater in 2009<sup>40</sup> and five in 2011<sup>41</sup>. In both years, two congeners were detected above EPA’s Method 1613 MLs; however, EPA concluded that the concentrations were low and that the discharges did not warrant further review (U.S. EPA, 2014a, 2014b).

Similar to previous years, Rayonier reported that they detected seven dioxin congeners in their effluent wastewater in 2015<sup>42</sup>. Table 3-108 presents Rayonier’s dioxin and dioxin-like compound TRI releases for 2009, 2011, and 2013. As shown, quantities of these congeners and the TWPE have decreased from 2009 to 2013.

**Table 3-108. Rayonier Dioxin and Dioxin-Like Compound Releases for 2009, 2011, 2013**

Year	Pounds of Dioxin and Dioxin-Like Compounds Released	Dioxin and Dioxin-Like Compound TWPE
2009	0.011	37,800
2011	0.016	38,900
2013	0.0026	31,100

Source: *TRILTOOutput2013\_v1*; DMR Pollutant Loading Tool.

<sup>40</sup> Rayonier detected concentrations of 1,2,3,7,8,9-HxCDD; 1,2,3,4,6,7,8-HpCDD; 1,2,3,4,6,7,8,9-OCDD; 2,3,7,8-TCDF; 2,3,4,7,8-PeCDF; 1,2,3,4,6,7,8-HpCDF; and 1,2,3,4,6,7,8,9-OCDF in 2009. See Section 5.3.2 in the 2012 Annual Review Report (U.S.EPA, 2014a).

<sup>41</sup> Rayonier detected concentrations of 1,2,3,4,6,7,8-HpCDD; 1,2,3,4,6,7,8,9-OCDD; 2,3,7,8-TCDF; 1,2,3,4,6,7,8-HpCDF; and 1,2,3,4,6,7,8,9-OCDF in 2011 (U.S. EPA, 2014b).

<sup>42</sup> Rayonier detected concentrations of 1,2,3,7,8-PeCDD; 1,2,3,4,6,7,8-HpCDD; 1,2,3,4,6,7,8,9-OCDD; 2,3,7,8-TCDF; 1,2,3,4,7,8-HxCDF; 1,2,3,4,6,7,8-HpCDF; and 1,2,3,4,6,7,8,9-OCDF in 2013.

### ***Resolute FP US Inc. – Calhoun Operations***

EPA reviewed TRI dioxin and dioxin-like compound discharges from Resolute FP US Inc. (Resolute)<sup>43</sup> in Calhoun, TN, as part of the 2011 and 2013 Annual Reviews. As part of these earlier reviews, EPA confirmed that all dioxin congeners were non-detect and zeroed the TRI dioxin and dioxin-like compound releases for the facility. Table 3-109 presents the facility’s dioxin and dioxin-like compound TRI releases for 2009, 2011, and 2013. Since the 2013 dioxin and dioxin-like compound discharges are similar to previous years, EPA similarly zeroed them. Zeroing dioxin and dioxin-like compound discharges from Resolute further decreases the Pulp and Paper dioxin and dioxin-like compound TRI TWPE to 158,000, as shown in Table 3-103.

**Table 3-109. Resolute Dioxin and Dioxin-Like Compound Releases for 2009, 2011, 2013**

<b>Year</b>	<b>Pounds of Dioxin and Dioxin-Like Compounds Released</b>	<b>Dioxin and Dioxin-Like Compound TWPE</b>
2009	0.0015	24,900
2011	0.0016	27,300
2013	0.0013	21,900

Source: *TRILTOOutput2013\_v1*; DMR Loading Tool.

### ***3.11.5 Pulp and Paper Category Manganese and Manganese Compound Releases in TRI***

Manganese and manganese compound discharges account for 14.5 percent of the total 2013 TRI TWPE. Manganese is not a regulated pollutant in the Pulp and Paper effluent limitations guidelines and standards (ELGs). In 2013, 112 facilities reported discharges of manganese and manganese compounds to TRI.

EPA reviewed manganese and manganese compound discharges in detail as part of the 2006 Pulp and Paper Detailed Study. At that time, EPA concluded that manganese and manganese compound discharges in this category are below treatable levels (U.S. EPA, 2006b). More recently, EPA reviewed the TRI manganese and manganese compound discharges for the Pulp and Paper Category as part of the 2011 and 2013 Annual Reviews. During these reviews, EPA compared annual releases reported to TRI to data reviewed as part of the 2006 Pulp and Paper Detailed Study and determined that the releases remained relatively consistent. Therefore, EPA confirmed that its previous conclusion from the 2006 detailed study still applies. As part of the 2011 and 2013 Annual Reviews, however, EPA did not further evaluate manganese concentration data (U.S. EPA, 2012, 2014b).

As part of the 2015 Annual Review, EPA reviewed manganese and manganese compound discharges in TRI from 2002 to 2013 (see Table 3-110). As shown, the discharges are fairly consistent from 2002 to 2013. However, EPA notes that nearly 50 percent of the facilities (112 out of 226 facilities) reporting releases to TRI reported releases of manganese and manganese compounds in 2013 (none contributed more than five percent of the manganese and manganese compound TRI TWPE for the Pulp and Paper Category). EPA has not evaluated manganese concentration data compared to treatable levels since the 2006 detailed study.

<sup>43</sup> This facility is referred to as Abibow US Inc. in previous annual review reports. In 2012, Abibow US Inc. became Resolute FP US Inc. (Resolute, 2012).

**Table 3-110. 2002–2013 Manganese and Manganese Compound Releases in TRI**

Discharge Year	Review Year	TRI Data	
		Number of Dischargers	Total TWPE
2002	2006	112	304,000
2004	2007	117	316,000
2007	2009	79	231,000
2008	2010	117	308,000
2009	2011	115	298,000
2011	2013	104	266,000
2013	2015	112	318,000

Sources: *TRIRelases2002*; *PCSLoads2002*; *TRIRelases2004\_v3*; *PCSLoads2004\_v3*; *TRIRelases2007\_v2*; *DMRLoads2007\_v4*; *TRIRelases2008\_v3*; *DMRLoads2008\_v3*; *TRIRelases2009\_v2*; *DMRLoads2009\_v2*; *DMRLTOutput2011\_v1*; *TRILTOutput2011\_v1*; *DMRLTOutput2013\_v1*; *TRILTOutput2013\_v1*.

### 3.11.6 Pulp and Paper Category Findings

The estimated toxicity of the Pulp and Paper Category discharges resulted primarily from hydrogen sulfide, dioxin and dioxin-like compound, and manganese and manganese-like compound releases reported to TRI. From the 2015 Annual Review, EPA found:

- Hydrogen Sulfide.** Seven facilities account for 80 percent of the TRI hydrogen sulfide releases, with one facility, Georgia-Pacific, in Monticello, MS, accounting for 27 percent of the releases. The Georgia-Pacific facility confirmed the 2013 TRI hydrogen sulfide release data, but stated that wastewater treatment system improvements have led to decreased hydrogen sulfide discharges in 2014.  
  
EPA identified 97 mills with hydrogen sulfide releases reported to TRI in 2013. Discussions with industry trade associations, AF&PA and NCASI, suggest that pulp and paper mills may calculate their hydrogen sulfide releases to TRI using total sulfide concentrations, which may result in an overestimate. Further, NCASI has developed a new sampling system that may allow measurement of dissolved sulfides, which AF&PA and NCASI believe may lessen the overestimate of hydrogen sulfide releases in TRI.
- Dioxin.** The majority of dioxin and dioxin-like compound releases from the Pulp and Paper Category result from five facilities. Three of the facilities had data changes, resulting in the dioxin and dioxin-like compound TWPE for the Pulp and Paper Category to decrease from 1,090,000 to 158,000. This decreases the 2013 Pulp and Paper Category TWPE from 3,070,000 to 2,140,000. EPA determined the remaining two facilities either had discharges below the method MLs or decreasing discharges in recent years.
- Manganese.** In 2013, 112 facilities reported releases of manganese and manganese compounds with none contributing more than five percent of the 2013 manganese and manganese compound TRI TWPE for the Pulp and Paper Category. Though the releases have been fairly consistent from 2002 to 2013, it has been nearly 10 years

since EPA conducted the Pulp and Paper Detailed Study in which it evaluated manganese and manganese compound concentrations compared to treatable levels.

- **Lead and Mercury.** EPA did not further investigate lead and lead compounds and mercury and mercury compounds as part of the 2015 Annual Review; however, EPA notes that a large number of facilities reported lead and lead compound and mercury and mercury compound releases (172 and 84 facilities, respectively), to TRI in 2013. These pollutants are not regulated by the Pulp and Paper Category ELGs.

### 3.11.7 Pulp and Paper Category References

1. ADEM. 2012. Alabama Department of Environmental Management. NPDES Permit for International Paper Company – Pine Hill Containerboard Mill, Pine Hill, AL (AL0002674). (August 1). EPA-HQ-OW-2015-0665. DCN 08198.
2. ERG. 2015. Preliminary Category Review – Facility Data Review and Revised Calculations for Point Source Category 430 – Pulp and Paper. (September). EPA-HQ-OW-2015-0665. DCN 08199.
3. Resolute FP. 2012. Resolute Forest Products. *Legal Entity Name Changes*. (May 23). EPA-HQ-OW-2015-0665. DCN 08200.
4. Schwartz, Jerry, and Paul Wiegand. 2014. Telephone and Email Communication Between Jerry Schwartz, American Forest and Paper Association, Paul Wiegand, National Council for Air and Stream Improvement, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013DMR and TRI Pulp and Paper Dischargers. (December). EPA-HQ-OW-2015-0665. DCN 08201.
5. U.S. EPA. 2004. *Technical Support Document for the 2004 Effluent Guidelines Program Plan*. Washington, D.C. (August). EPA-821-R-04-014. EPA-HQ-OW-2003-0074-1346 through 1352.
6. U.S. EPA. 2006a. *Technical Support Document for the 2006 Effluent Guidelines Program Plan*. Washington, D.C. (December). EPA-821-R-06-018. EPA-HQ-OW-2004-0032-2782.
7. U.S. EPA. 2006b. *Final Report: Pulp, Paper, and Paperboard Detailed Study*. Washington, D.C. (December). EPA-821-R-06-016. EPA-HQ-OW-2004-0032-2249.
8. U.S. EPA. 2007. *Technical Support Document for the Preliminary 2008 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-821-R-07-007. EPA-HQ-OW-2006-0771-0819.
9. U.S. EPA. 2008. *Technical Support Document for the 2008 Effluent Guidelines Program Plan*. Washington, D.C. (August). EPA-821-R-08-015. EPA-HQ-OW-2006-0771-1701.

10. U.S. EPA. 2009a. *Technical Support Document for the Preliminary 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-821-R-09-006. EPA-HQ-OW-2008-0517-0514.
11. U.S. EPA. 2009b. *Technical Support Document for the Annual Review of Existing Effluent Guidelines and Identification of Potential New Point Source Categories*. EPA821-R-09-007. Washington, D.C. (October). EPA-HQ-OW-2008-0517-0515.
12. U.S. EPA. 2011. *Technical Support Document for the 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA 820-R-10-021. EPA-HQ-OW-2008-0517-0618.
13. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.
14. U.S. EPA. 2014a. *The 2012 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-004. EPA-HQ-OW-2010-0824-0320.
15. U.S. EPA. 2014b. *The 2013 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-003. EPA-HQ-OW-2014-0170-0077.
16. U.S. EPA. 2016. *Preliminary 2016 Effluent Guidelines Program Plan*. Washington, D.C. (June). EPA-821-R-16-001. EPA-HQ-OW-2015-0665. DCN 08208.
17. Wiegand, Paul. 2015. National Council for Air and Stream Improvement. A Summary of Information Regarding the Presence, Fate, and Concentrations of Reduced Sulfur in Pulp and Paper Mill Treated Effluents. (January). EPA-HQ-OW-2015-0665. DCN 08202.

### 3.12 Textile Mills (40 CFR Part 410)

EPA identified the Textile Mills (Textiles) Category for preliminary review because it ranks high again, in terms of toxic-weighted pound equivalents (TWPE), in the final 2015 combined point source category rankings. Previously, EPA reviewed discharges from this category as part of the 2005, 2006, 2007, 2010, and 2011 Annual Reviews in which it also ranked high (U.S. EPA, 2005, 2006, 2007, 2011, 2012). This section summarizes the results of the 2015 Annual Review. EPA focused its 2015 review on discharges of toxaphene and sulfide because of their high TWPE relative to the other pollutants discharged by facilities in the Textiles Category.

#### 3.12.1 Textiles Category 2015 Toxicity Rankings Analysis

Table 3-111 compares the toxicity rankings analyses (TRA) data for the Textiles Category from the 2011, 2013, and 2015 Annual Reviews. EPA did not conduct the TRA in 2012 or 2014, but instead reviewed additional data sources as part of the even-year annual review, as described in Section 2.2.1 of EPA’s Preliminary 2016 Plan (U.S. EPA, 2016). During the 2015 Annual Review, EPA did not identify any data corrections to the 2013 Discharge Monitoring Report (DMR) and Toxic Release Inventory (TRI) discharge data for the Textiles Category.

**Table 3-111. Textiles Category TRI and DMR Facility Counts and Discharges Reported in 2009, 2011, and 2013**

Year of Discharge	Year of Review	Textiles Category Facility Counts <sup>a</sup>			Textiles Category TWPE		
		Total TRI Facilities	Total DMR Major Facilities	Total DMR Minor Facilities	TRI TWPE <sup>b</sup>	DMR TWPE <sup>c</sup>	Total TWPE
2009	2011	54	35	21	1,910	37,200	39,100
2011	2013	41	27	25	1,070	22,300	23,400
2013	2015	43	29	21	2,210	89,500	91,700

Sources: *TRIRelases2009\_v2*, *DMRLoads2009\_v2*, and 2011 Annual Review Report (for 2009 DMR data) (U.S. EPA, 2012); *DMRLTOOutput2011\_v1* (for 2011 DMR); *TRILTOOutput2011\_v1* (for 2011 TRI); *DMRLTOOutput2013\_v1* (for 2013 DMR); *TRILTOOutput2013\_v1* (for 2013 TRI)

Note: EPA did not evaluate 2010 or 2012 DMR and TRI data

Note: TWPE values are rounded to three significant figures. Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Number of facilities with TWPE greater than zero.

<sup>b</sup> Releases include direct discharges to surface waters and transfers to POTWs. Transfers to POTWs account for POTW removals.

<sup>c</sup> Includes DMR data from both major and minor dischargers.

As shown in Table 3-111, the total TWPE increased significantly in 2013, while the number of TRI and major and minor DMR facilities decreased slightly from 2009 to 2013.

#### 3.12.2 Textiles Category Pollutants of Concern

EPA’s 2015 review of the Textiles Category focused on the 2013 DMR discharges because the DMR data dominate the category’s combined TWPE. Table 3-112 shows the five

pollutants with the highest contribution to the 2013 DMR TWPE. As a point of comparison, Table 3-112 shows the 2011 DMR facility count and TWPE for these top five pollutants, based on the 2013 Annual Review (U.S. EPA, 2014).

Toxaphene and sulfide contribute more than 95 percent of the total 2013 DMR TWPE. Of these top pollutants, only sulfide is a regulated pollutant in the Textiles Category effluent limitation guidelines and standards (ELGs) (40 CFR Part 410). EPA’s investigations of reported discharges of the top two pollutants are presented in Sections 3.12.3 and 3.12.4. EPA did not investigate the other pollutants, including copper, zinc, and total residual chlorine, as part of the 2015 Annual Review, because they represent a small percentage (4 percent) of the 2013 DMR TWPE for the Textiles Category.

**Table 3-112. 2013 Textiles Category Top DMR Pollutants**

Pollutant <sup>b</sup>	2013 DMR Data <sup>a</sup>		2011 DMR Data <sup>a</sup>	
	Number of Facilities Reporting Pollutant <sup>c</sup>	TWPE	Number of Facilities Reporting Pollutant <sup>c</sup>	TWPE
Toxaphene	1	48,000	0	0
Sulfide	9	37,600	13	19,200
Copper	13	2,280	9	67.1
Zinc	9	1,330	8	13.1
Total Residual Chlorine	11	110	17	1,170
<b>Top Pollutant Total</b>	<b>NA</b>	<b>89,300</b>	<b>NA</b>	<b>20,400</b>
<b>Textiles Category Total</b>	<b>50</b>	<b>89,500</b>	<b>52</b>	<b>22,300</b>

Sources: *DMRLTOutput2013\_v1* (for 2013 TWPE); *DMRLTOutput2011\_v1* (for 2011 TWPE)

Note: Sums of individual values may not equal the total presented, due to rounding.

NA: Not applicable.

<sup>a</sup> Includes DMR data from both major and minor dischargers.

<sup>b</sup> Copper, zinc, and total residual chlorine discharges combined contribute 4 percent of the 2013 category DMR TWPE. Therefore, EPA did not review copper, zinc, or total residual chlorine discharges as part of the 2015 Annual Review.

<sup>c</sup> Number of facilities with TWPE greater than zero.

### 3.12.3 Textiles Toxaphene Discharges in DMR

EPA’s investigation of the toxaphene discharges revealed that one facility, Mohawk Industries Inc. Oak River Facility (Mohawk Industries), in Bennettsville, SC, accounts for 100 percent of the 2013 DMR toxaphene discharges. In 2013, the facility reported 1.59 pounds of toxaphene discharged, corresponding to 48,000 TWPE (*DMRLTOutput2013\_v1*).

Mohawk Industries in Bennettsville, SC, discharges toxaphene from one outfall and submits monthly toxaphene concentrations, presented in Table 3-113. The facility’s permit includes a monthly average toxaphene limit of 0.79 micrograms per liter (µg/L), equal to 0.00079 milligrams per liter (mg/L), and a daily maximum toxaphene limit of 17.8 µg/L (0.0178 mg/L) for outfall 001 (Rippy, 2015). EPA reviewed this facility’s toxaphene discharges as part of the 2010 Annual Review. The facility contact confirmed that toxaphene is not used as a raw material or in any other chemicals at the facility. However, detectable concentrations have been



found in water quality data. Therefore, the South Carolina Department of Health and Environmental Control (SC DHEC) included limitations for toxaphene in the facility's permit (U.S. EPA, 2011). As shown in Table 3-113, the concentrations for June, July, November, and December 2013 are above the facility's monthly average permit limit.

**Table 3-113. Mohawk Industries' 2013 DMR Monthly Toxaphene Discharges Reported for Outfall 001**

Date	Monthly Average Flow (MGD)	Monthly Average Concentration (mg/L)	NPDES Monthly Average Permit Limit (mg/L)
31-Jan-13	0.190	0.00025	0.00079
28-Feb-13	0.106	0.00025	0.00079
31-Mar-13	0.160	0.000025	0.00079
30-Apr-13	0.240	0.00025	0.00079
31-May-13	0.250	0.00025	0.00079
30-Jun-13	0.230	0.01 <sup>a</sup>	0.00079
31-Jul-13	0.096	0.007 <sup>a</sup>	0.00079
31-Aug-13	0.130	0.00025	0.00079
30-Sep-13	0.140	0.00012	0.00079
31-Oct-13	0.075	0.00025	0.00079
30-Nov-13	0.077	0.0012 <sup>a</sup>	0.00079
31-Dec-13	0.110	0.025 <sup>a</sup>	0.00079

Source: *DMRLTOutput2013\_v1*.

<sup>a</sup> Toxaphene concentration exceeds monthly average permit limit.

As part of the 2015 Annual Review, EPA contacted the SC DHEC to confirm the facility's 2013 toxaphene discharges. The state contact confirmed the discharges and stated that the higher concentrations for four months in 2013 were due to matrix interferences when analyzing the water samples (Rippy, 2015). The facility provided detailed notes discussing the issues on the monthly DMRs, shown in Table 3-114.

**Table 3-114. Mohawk Industries 2013 DMR Notes for Toxaphene Discharges**

Date	Facility DMR Notes
30-Jun-13	"The detection limit for toxaphene could not be achieved due to matrix interference caused by dyes. Two samples for June 2013 were analyzed attempting to achieve 0.5 micrograms per liter (µg/L). Both of the samples exhibited chromatographic co-elution, which is defined as multiple compounds having retention times that are the same or similar. Dilution was necessary to verify toxaphene was not present at the level reported, in which two co-eluting dye compounds were not present."
31-Jul-13	"Toxaphene is not used anywhere on the Oak River site, nor is it used in any process. There apparently is an interference in the testing leading to a false positive. The facility is currently changing to another lab certified in South Carolina that will also parallel test."
30-Nov-13	"Two samples were analyzed for toxaphene and the lowest detection limit achieved on both samples was 2.5 µg/L. A dilution was required for both samples to eliminate matrix interference from non-target background and resulted in an elevated reporting limit of 2.5 µg/L. The lab exhausted everything allowed in the EPA Method 8081B procedure and were unable to achieve a reading below our limit of 0.79 µg/L."
31-Dec-13	"PQL for toxaphene was found to be less than 0.025 mg/L using EPA Method 8081B. The sample was diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit was elevated in order to reflect the necessary dilution."

Source: Rippy, 2015

EPA reviewed 2014 toxaphene DMR discharges and confirmed the toxaphene TWPE has decreased to 3,860.

### 3.12.4 Textiles Sulfide Discharges in DMR

EPA's investigation of the sulfide discharges revealed that one facility, King America Finishing Inc., (King America) in Sylvania, GA, accounts for over 70 percent of the 2013 DMR sulfide discharges (shown in Table 3-115). EPA did not investigate the eight remaining facilities discharging sulfide as part of the 2015 Annual Review.

**Table 3-115. Top 2013 DMR Sulfide Discharging Facilities**

Facility Name	Facility Location	Pounds of Pollutant Discharged	Pollutant TWPE	Percent of Category TWPE
King America Finishing Inc.	Sylvania, GA	9,510	26,600	70.9%
All other sulfide dischargers in the Textiles Category <sup>a</sup>		3,910	10,900	29.1%
<b>Total</b>		<b>13,400</b>	<b>37,600</b>	<b>100%</b>

Source: *DMRLTOutput2013\_v1*.

Note: Sums of individual values may not equal the total presented, due to rounding.

<sup>a</sup> Eight additional facilities submitted sulfide discharges in the 2013 DMR data.

King America in Sylvania, GA, produces cotton and poly/cotton woven fabrics. The facility discharges sulfide from outfall 001. The facility was issued a new permit in December 2013. The previous permit included a monthly average sulfide limit of 31 pounds per day (lb/day) (14.1 kilograms per day (kg/day)) and a daily maximum sulfide limit of 62 lb/day (28.1 kg/day) for outfall 001 (Beranek, 2015). The new permit includes a monthly average sulfide limit of 24 lb/day (10.9 kg/day) and a daily maximum sulfide limit of 48 lb/day (21.8 kg/day) for outfall 001 (GA EPD, 2013).

Table 3-116 presents King America's 2013 sulfide discharges, along with average monthly flow for outfall 001. As shown in Table 3-116, 2013 sulfide discharges are below the facility's previous and new permit limits.

**Table 3-116. King America's 2013 DMR Monthly Sulfide Discharges Reported for Outfall 001**

Date	Monthly Average Flow (MGD)	Monthly Average Quantity (kg/day)	NPDES Monthly Average Permit Limit (kg/day) <sup>a</sup>
31-Jan-13	1.28	5.44	14.1
28-Feb-13	1.38	5.89	14.1
31-Mar-13	1.40	5.45	14.1
30-Apr-13	1.41	5.89	14.1
31-May-13	1.20	4.98	14.1
30-Jun-13	1.48	5.60	14.1

**Table 3-116. King America's 2013 DMR Monthly Sulfide Discharges  
Reported for Outfall 001**

Date	Monthly Average Flow (MGD)	Monthly Average Quantity (kg/day)	NPDES Monthly Average Permit Limit (kg/day) <sup>a</sup>
31-Jul-13	1.61	7.44	14.1
31-Aug-13	1.72	6.50	14.1
30-Sep-13	1.73	6.59	14.1
31-Oct-13	1.57	6.08	14.1
30-Nov-13	1.59	6.84	14.1
31-Dec-13	1.44	5.65	10.9

Source: *DMRLTOutput2013\_v1*; Beranek, 2015, GA EPD, 2013.

<sup>a</sup> The permit limit listed for January to November 2013 is from the facility's previous permit, which expired in November 2013. The permit limit listed for December 2013 is from the facility's new permit, issued in December 2013.

As part of the 2015 Annual Review, EPA contacted the facility to discuss their sulfide discharges. The facility contact confirmed the 2013 discharges and stated that the facility monitors for sulfide on a daily basis. The majority of the daily samples are non-detect and the facility uses the detection limit for these samples to calculate monthly average loads. Because the monthly average values submitted on the DMR are averages of the daily samples collected throughout the month and non-detect samples are assumed to be at the detection limit, the overall monthly average load is always equivalent to or greater than the detection limit for sulfide (Hutcheson, 2015). Sulfide discharges are below permit limits for outfall 001 and the facility is performing daily monitoring; therefore.

### 3.12.5 Textiles Category Findings

The estimated toxicity of the Textiles Category discharges resulted primarily from toxaphene and sulfide discharges reported on DMRs. From the 2015 Annual Review, EPA found:

- **Toxaphene.** One facility, Mohawk Industries, Inc. Oak River Facility, in Bennettsville, SC, contributed 100 percent of the 2013 DMR toxaphene discharges. The facility experienced matrix interferences with analyzing samples in 2013, resulting in false positive results; therefore, EPA does not consider Mohawk Industries' reported toxaphene discharges to be representative of discharges across the Textiles Category.
- **Sulfide.** King America Finishing, Inc., in Sylvania, GA, contributed over 70 percent of the 2013 DMR sulfide discharges. All 2013 sulfide discharges are below the facility's permit limits and the facility is performing daily monitoring.

### 3.12.6 Textiles Category References

1. Beranek, Christopher. 2015. Telephone and Email Communication Between Christopher Beranek, Georgia Environmental Protection Division, and Kimberly

- Bartell, Eastern Research Group, Inc., Re: 2013 DMR Sulfide Discharges for King America Finishing. (May 11). EPA-HQ-OW-2015-0665. DCN 08203.
2. ERG. 2015. Preliminary Category Review – Facility Data Review for Point Source Category 410 – Textiles. (September). EPA-HQ-OW-2015-0665. DCN 08204.
  3. GA EPD. 2013. Georgia Department of Natural Resources, Environmental Protection Division. *NPDES Permit: King America Finishing, Inc. (GA0003280)*. (November 19). EPA-HQ-OW-2015-0665. DCN 08205.
  4. Hutcheson, Matthew. 2015. Telephone and Email Communication Between Matthew Hutcheson, King America Finishing, and Kimberly Bartell, Eastern Research Group, Inc., Re: 2013 DMR Sulfide Discharges. (May 13). EPA-HQ-OW-2015-0665. DCN 08206.
  5. Rippy, Crystal. 2015. Telephone and Email Communication Between Crystal Rippy, South Carolina Department of Health and Environmental Compliance, and Kara Edquist, Eastern Research Group, Inc., Re: 2013 DMR Discharges for Mohawk Industries. (February 13). EPA-HQ-OW-2015-0665. DCN 08207.
  6. U.S. EPA. 2005. *Preliminary 2005 Review of Prioritized Categories of Industrial Dischargers*. Washington, D.C. (August). EPA-821-B-05-004. EPA-HQ-OW-2004-0032-0016.
  7. U.S. EPA. 2006. *Technical Support Document for the 2006 Effluent Guidelines Program Plan*. Washington, D.C. (December). EPA-821-R-06-018. EPA-HQ-OW-2004-0032-2782.
  8. U.S. EPA. 2007. *Technical Support Document for the Preliminary 2008 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA-821-R-07-007. EPA-HQ-OW-2006-0771-0819.
  9. U.S. EPA. 2011. *Technical Support Document for the 2010 Effluent Guidelines Program Plan*. Washington, D.C. (October). EPA 820-R-10-021. EPA-HQ-OW-2008-0517-0618.
  10. U.S. EPA. 2012. *The 2011 Annual Effluent Guidelines Review Report*. Washington, D.C. (December). EPA 821-R-12-001. EPA-HQ-OW-2010-0824-0195.
  11. U.S. EPA. 2014. *The 2013 Annual Effluent Guidelines Review Report*. Washington, D.C. (September). EPA-821-R-14-003. EPA-HQ-OW-2014-0170-0077.
  12. U.S. EPA. 2016. *Preliminary 2016 Effluent Guidelines Program Plan*. Washington, D.C. (June). EPA-821-R-16-001. EPA-HQ-OW-2015-0665. DCN 08208.

#### **4. EPA'S 2015 REVIEW OF ADDITIONAL INDUSTRIAL CATEGORIES AND POLLUTANTS**

For the 2015 Annual Review EPA also initiated a review of two additional point source categories that were not identified as categories warranting further review in the 2015 TRA; Battery Manufacturing (40 CFR Part 461) and Electrical and Electronic Components (40 CFR Part 469), specifically Subpart B Electronic Crystals. In addition, EPA reviewed in more detail 2-Mercaptobenothiazole (MBT), a chemical compound used in tire manufacturing. Tire manufacturing is covered under the Rubber Manufacturing Point Source Category (40 CFR Part 428), Subpart A (Tire and Inner Tube Plants Subcategory).

EPA initiated these reviews to address comments received from stakeholders regarding recent changes to these industries as well as potential new pollutant releases to the environment through industrial wastewater discharge. As part of these reviews, EPA reviewed the existing ELGs and supporting development documents, examined recent changes to the industries, including new processes and technologies that may be generating new pollutants of concern, or sources of industrial wastewater discharge not previously considered, and reviewed readily available data on current discharges.

EPA documented the quality of the data supporting its review of these industrial categories, analyzed how the data could be used to characterize the industrial wastewater discharges, and prioritized the findings for further review. See Appendix A of this report for more information on data usability and quality of the data sources supporting these reviews.

Sections 4.1, 4.2, and 4.3 of this report provide details of each of these reviews.

##### **4.1 Battery Manufacturing (40 CFR Part 461)**

Stakeholders raised concerns about potential wastewater discharges from new battery technologies, notably in comments submitted in response to EPA's *Final 2010 Effluent Guidelines Program Plan* (76 FR 66286; U.S. EPA, 2013). Concerns centered on the recent advent of vanadium redox batteries, as well as the increased production of lithium ion batteries (including electric vehicle batteries). As part of the 2015 Annual Review, EPA performed the following research to evaluate whether further review of the Battery Manufacturing Category is warranted:

- Reviewed the Battery Manufacturing Point Source Category Effluent Limitations Guidelines and Standards (ELGs).
- Collected information about the current status of U.S. battery manufacturing.
- Evaluated the applicability of the existing ELGs to more recent production practices, reviewed readily available information on wastewater generated from these more recent production practices.

The Battery Manufacturing ELGs (40 CFR Part 461) were promulgated in 1984. The ELGs set limits for subcategories based on the anode material: cadmium, calcium, lead, leclanché,<sup>44</sup> lithium, magnesium, and zinc. EPA's review indicates that battery technologies have

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<sup>44</sup> Leclanché is a type of zinc anode battery containing acid chloride electrolytes.

greatly advanced since the promulgation of the Battery Manufacturing ELGs and that wastewater discharges from the manufacture of some of the new battery technologies may not be covered. However, EPA identified little information on the manufacturing processes for these battery technologies and how they might generate wastewater. In addition, EPA identified only limited information about the extent of U.S. manufacturing of batteries that use advanced and emerging battery technologies.

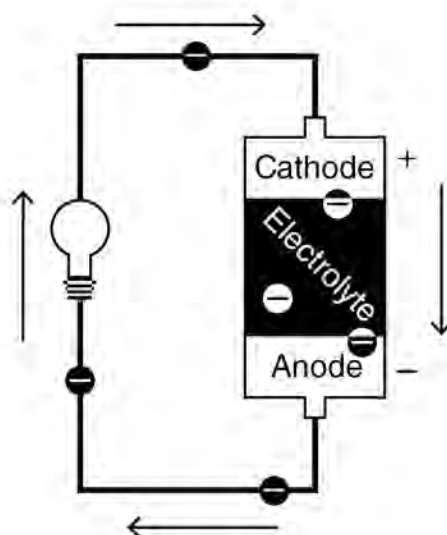
The following sections provide an overview of the Battery Manufacturing ELGs applicable to current U.S. battery manufacturing, specifically consideration of two new battery technologies: vanadium redox batteries and lithium ion batteries (including electric vehicle batteries).

#### ***4.1.1 Overview of Battery Manufacturing, the ELGs, and Current U.S. Manufacturing***

Battery manufacturing encompasses the production of modular electric power sources that contain part or all of their fuel within the unit and that generate electric power directly by a chemical reaction (U.S. EPA, 1984a). There are three major components of a battery cell (see Figure 4-1):

- Anode (negative electrode)
- Cathode (positive electrode)
- Electrolyte

The electrolyte separates the anode from the cathode and causes a chemical reaction that generates electrons at the anode, resulting in an electrical difference between the anode and cathode. When the electrical circuit is closed, such as when connecting the battery to a light bulb, electrons flow from the anode to the cathode and the battery discharges (indicated by arrows in Figure 4-1). Rechargeable batteries may be repeatedly discharged and recharged. During charging, electrons flow in reverse, from the cathode to the anode, to restore the battery to its original state (Northwestern University, 2014).



**Figure 4-1. Simplified Battery Diagram (adapted from Northwestern University, 2014).**

The Battery Manufacturing ELGs (40 CFR Part 461) are subcategorized by anode material. At the time of the rulemaking, data showed that battery cells with common process operations frequently use the same anode material, and that facilities manufacturing batteries with a common anode material generated wastewater bearing the same major pollutants (U.S. EPA, 1984a). The ELGs include seven subcategories: cadmium, calcium, lead, leclanché, lithium, magnesium, and zinc. Limitations are production normalized by the weight of the anode material, cathode material, or the entire battery cell, depending on the subcategory and wastewater stream.

In the mid-1980s, after the Battery Manufacturing ELGs were promulgated, rechargeable batteries, including lithium ion batteries, emerged in the market (Salkind et al., 2003). Current rechargeable battery types and their common uses are listed in Table 4-1. The existing ELGs do not cover wastewater discharges from the manufacture of some types of rechargeable batteries (e.g., nickel metal hydride) because the anode materials are not accounted for under any of the specific subcategories. In addition, rechargeable batteries are generally classified by the ions flowing between the anode and cathode, so different anode materials may be used for the same kind of battery, which would change the applicability of the ELGs even within the same rechargeable battery type. Two kinds of rechargeable batteries, lithium ion and vanadium redox, were recently brought to EPA's attention by stakeholders, and are further discussed below, in Section 4.1.2.

**Table 4-1. Current Rechargeable Batteries and Common Uses**

Rechargeable Battery Technology	Common Uses
Lithium Ion	Consumer electronic devices, portable electronics, electric and hybrid vehicles
Lithium Manganese Oxide	Consumer electronic devices
Nickel-Metal Hydride (NiMH)	Electric and hybrid vehicles
Nickel-Hydrogen (NiH <sub>2</sub> )	Satellites and spacecraft
Vanadium Redox (Flow)	Energy storage (electric grid and remote communities)

**Table 4-1. Current Rechargeable Batteries and Common Uses**

Rechargeable Battery Technology	Common Uses
Nickel-Cadmium (NiCd)	Largely phased out and replaced by NiMH and other technologies

Sources: American Vanadium, 2014; Clyde Space, 2014; Energizer, 2010; Maxell, 2012; Vacuum Products Canada, Inc., 2013.

In 1984, as part of the development of the Battery Manufacturing ELGs, EPA collected information from 254 U.S. battery manufacturing facilities. At the time, 21 facilities reported having direct discharges to surface waters, 149 reported discharges to POTWs, and 84 reported zero discharges (U.S. EPA, 1984a, 1984b). From its 2015 Annual Review, EPA identified 25 active NPDES permits for battery manufacturing facilities in EPA’s Integrated Compliance Information System – National Pollutant Discharge Elimination System (ICIS-NPDES)<sup>45</sup> database, but only one battery manufacturing facility reported DMR discharges greater than zero in 2013 (*DMRLTOutput2013\_v1*). Fifty-eight facilities reported water releases greater than zero to TRI in 2013, 23 of which reported direct releases (*TRILTOutput2013\_v1*). Current discharge data continue to suggest that a substantial portion of battery manufacturers discharge wastewater to POTWs. The data also suggest that there are more facilities reporting releases from battery manufacturing, as indicated in TRI, than are currently reporting discharges on DMRs. It should be noted, however, that the DMR and TRI data sets may not include information about all battery manufacturing facilities due to limitations of the reporting requirements. For example, some facilities classified as minor dischargers may not be captured in the DMR data. Additionally, TRI does not include data from small establishments that do not meet reporting thresholds. Further, the reported releases in TRI may be an overestimate, as TRI reporting requirements allow facilities to base release reports on estimates, not actual measurements. For more information on the limitations of the DMR and TRI datasets, see Section 2.1.

#### **4.1.2 Overview of Rechargeable Batteries**

Commercial and consumer uses of rechargeable batteries became widespread in the mid-1980s, after the Battery Manufacturing ELGs were promulgated. Further, with advances in hybrid and electric vehicles, the automobile industry increasingly uses rechargeable batteries. The following subsections provide a summary of the comments EPA received regarding vanadium redox, lithium ion, and other electric and hybrid vehicle batteries, in particular, as well as the information EPA has collected to date about rechargeable batteries.

##### **Vanadium Redox Batteries**

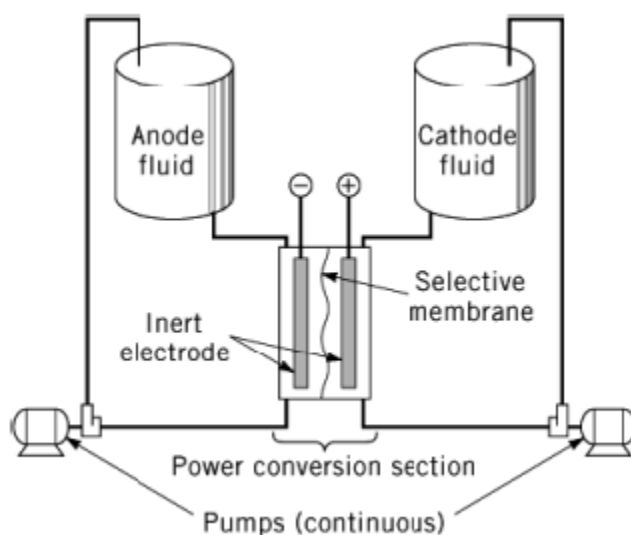
At a National Association of Clean Water Agencies (NACWA) National Pretreatment and Pollution Prevention Workshop in 2014, attendees raised concerns about the potential growth in manufacturing of vanadium redox batteries and the implications for wastewater management. The discussion indicated that vanadium redox batteries are currently fabricated in research and development laboratories and that all wastewater resulting from their production is hauled off site as hazardous waste. There was further speculation that, as production of vanadium redox batteries becomes more widely commercialized and the volume of wastewater generated

<sup>45</sup> Queried from EPA’s [Enforcement and Compliance History Online](#) (ECHO) Water Facility search.



increases, these facilities may begin sending wastewater to POTWs or applying for discharge permits, as hauling and treating larger volumes of wastewater off site becomes too expensive.

Vanadium redox or vanadium flow batteries are being developed to function as sources of energy during power outages and for use in remote areas and developing countries. These batteries are rechargeable and generate electricity by pumping liquid electrolytes containing vanadium ions through electrochemical cells separated by ion selective membranes (Figure 4-2) (Salkind et al., 2003). Unlike traditional batteries, flow batteries are not closed systems. This allows for potential replacement of depleted electrolyte and may result in a reduced rate of degradation of the anode and cathode materials (St. John, 2014). Flow batteries contain a liquid electrolyte; therefore, handling may be a concern for disposal or waste management.



**Figure 4-2. Simplified Schematic of a Redox Flow Battery (Salkind et al., 2003)**

Because of the anode material they employ (often graphite), vanadium redox batteries may not be covered under the current Battery Manufacturing ELGs (40 CFR Part 461). However, EPA's investigation did not identify information that vanadium redox batteries are commercially manufactured in the U.S., nor did EPA find information about vanadium redox battery manufacturing processes. Available information suggests that vanadium redox battery manufacturing in the U.S. remains limited to the research and development phase at this time, which is consistent with the stakeholder comments (American Vanadium, 2014).

EPA identified one company in Canada, American Vanadium, which distributes German-made vanadium redox batteries in North America for electric grid energy storage. EPA searched the 2012 and 2013 Canadian National Pollutant Release Inventory (NPRI), Canada's legislated, publicly accessible inventory of pollutant releases to air, water and land, and reviewed disposals and transfers for recycling by the company name and by industry. EPA did not find any reported wastewater releases in the Canadian NPRI (Environment Canada, 2014). American Vanadium has an operations center in Nevada; however, searches of the DMR Pollutant Loading Tool by company name and location did not indicate that the facility had a NPDES permit or reported to TRI.

### ***Lithium Ion Batteries***

The Association of Clean Water Administrators (ACWA) commented on EPA's Final 2010 Effluent Guidelines Program Plan, recommending that EPA modify the battery manufacturing category to explicitly exclude lithium ion batteries from the lithium battery subpart (U.S. EPA, 2013). No further detail was provided in the comment.

Lithium ion batteries are a type of rechargeable battery in which the lithium ions move from the anode to the cathode during discharge and from the cathode to the anode during recharge. Lithium ion battery technologies are rapidly advancing, and there are many battery types and configurations using a variety of materials for the anode, cathode, and electrolyte. In these batteries, lithium is often part of the electrolyte, which can be a solid or liquid medium (Salkind et al., 2003), and is not necessarily the anode material. Graphite or hard carbon is often used as the anode material, but lithium and lithium alloys are also used. Lithium ion batteries using silicon as the anode material are also being developed (Patterson, 2009).

The Lithium Subcategory (Subpart E) of the Battery Manufacturing ELGs sets limits for wastewater pollutants in lithium anode battery manufacturing discharges (40 CFR Part 461.50). The battery cells reported to be manufactured at the time of the rulemaking did not use an aqueous or liquid electrolyte. EPA noted in the 1984 *Development Document for Effluent Limitations Guidelines and Standards for the Battery Manufacturing Point Source Category* that there are few process wastewater sources associated with lithium anode battery manufacturing (U.S. EPA, 1984a).

Subpart E includes standards for new sources (New Source Performance Standards and Pretreatment Standards for New Sources) covering four operations: lead iodide cathodes, iron disulfide cathodes, miscellaneous wastewater streams, and air scrubbers. Miscellaneous wastewater stream sources include ancillary operations, such as cell testing, scrap disposal, cell washing, and floor and equipment washing (U.S. EPA, 1984a). The standards explicitly prohibit discharges of wastewater pollutants from any battery manufacturing operations not listed.

Based on the applicability of Subpart E, wastewater discharges from manufacturing of lithium ion batteries using lithium as the anode material are subject to the limits for miscellaneous wastewater streams. This subpart, however, does not cover manufacturing of lithium ion batteries using a non-lithium anode material.

EPA identified one U.S. manufacturer of lithium ion batteries, EnerDel, Inc. (Indianapolis, IN).<sup>46</sup> The company does not hold NPDES permits for any of its facilities. EPA did not find further information about the extent of current U.S. lithium ion battery manufacturing or the waste streams generated during manufacture.

In April 2015, Tesla Motors announced it would begin production of the Powerwall, a rechargeable lithium-ion battery designed to store energy at individual residences for load shifting, backup power, and self-consumption of solar power generation, for delivery beginning in the late summer of 2015 (Tesla Motors, 2015a). EPA was not able to identify the anode type, based on available information. The battery is available in 7kWh and 10kWh capacities. Initial,

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<sup>46</sup> [ECHO Facility Search](#) by facility name.

small-scale production will occur at Tesla’s Fremont, CA factory, and in 2016, production will move to Tesla’s factory in Nevada, which is currently under construction (Bomey, 2015). Tesla does not hold a NPDES permit for its Fremont, CA facility.

### ***Electric Vehicle Battery Manufacturing***

EPA received a public comment on its Final 2010 Effluent Guidelines Program Plan expressing concern about potential environmental effects if electric vehicle battery manufacturing facilities were to be built in California (U.S. EPA, 2013).

Table 4-2 below summarizes the types of batteries used in several hybrid and electric vehicle models; however, none of these batteries are currently manufactured in the U.S. Lithium ion battery technology is used in a majority of the current electric and hybrid vehicles in the U.S. market.

**Table 4-2. Rechargeable Battery Types used in Hybrid and Electric Vehicles**

<b>Car Company</b>	<b>Model</b>	<b>Electric Battery</b>
Chevrolet	Volt Electric Vehicle	Lithium Ion
	Spark Electric Vehicle	Lithium Ion
Honda	Fit Electric Vehicle	Lithium Ion
	Accord Hybrid	Lithium Ion
	Insight Hybrid	Nickel-Metal Hydride
	Civic Hybrid 2011 – 2015	Lithium Ion
	Civic Hybrid 2001 – 2010	Nickel-Metal Hydride
	CR-Z Hybrid	Lithium Ion
	FCX Clarity Fuel Cell Electric Vehicle	Lithium Ion
Tesla	S Electric Vehicle	Lithium Ion
Toyota	Prius Hybrids	Nickel-Metal Hydride
	Prius Plug-In Hybrid	Lithium Ion
	Camry Hybrid	Nickel-Metal Hydride
	Avalon Hybrid	Nickel-Metal Hydride
	Highlander Hybrid	Nickel-Metal Hydride
Scion	iQ Electric Vehicle	Lithium Ion

Sources: General Motors, 2014a, 2014b; American Honda Motor Company, Inc., 2013a, 2013b, 2014, 2015a, 2015b, 2015c, 2015d; Tesla Motors, 2015c; Toyota, 2012, 2015a, 2015b, 2015c, 2015d, 2015e, 2015f, 2015g.

Tesla Motors currently purchases lithium ion batteries for its electric vehicles from Panasonic. Tesla and Panasonic began building a large-scale battery manufacturing facility in Nevada in 2014. The plant is expected to be completed in 2017 and is planned to produce 35 GWh of cells and 50 GWh of packs per year by 2020, an amount which would exceed all of the current lithium ion battery production worldwide (Ramsey, 2014; Tesla Motors, 2015b).

### ***4.1.3 Summary of Findings from EPA’s Review of Battery Manufacturing***

EPA’s research indicates that battery technologies have greatly changed since the promulgation of the Battery Manufacturing ELGs in 1984, with the advent of rechargeable batteries, including lithium ion and vanadium redox batteries. The 1984 ELGs apply to discharges from battery manufacturing facilities if the battery type they manufacture is listed as one of six manufacturing subcategories. Each subcategory is based on the type of metal used to

manufacture the battery anodes. It is unclear at this time whether the existing ELGs cover discharges from the manufacture of newer types of batteries because the anode materials are not covered by any of the specific ELG subcategories. In addition, rechargeable batteries are generally classified by the ions flowing between the anode and cathode, so different anode materials may be used for the same kind of battery and whether the current ELGs address discharges for this type of manufacturing is also questionable.

However, despite the advances in technologies, battery manufacturing in the U.S. appears to have declined since the 1980s. EPA identified 58 battery manufacturing facilities that reported water releases greater than zero to TRI in 2013, 23 of which reported direct releases (*TRILTOOutput2013\_v1*). EPA identified 25 NPDES permits for battery manufacturing facilities currently designated as active (ICIS-NPDES), but only one battery manufacturing facility reporting DMR discharges greater than zero in 2013 (*DMRLTOOutput2013\_v1*).

EPA identified at least one facility, a Tesla Motors plant being built in Nevada, which will be manufacturing lithium ion batteries on a large scale. In addition, stakeholders have expressed concern over potential growth in manufacturing of vanadium redox and electric vehicle batteries and its implications for wastewater management.

While the battery manufacturing industry and battery technologies are advancing, EPA has not yet identified information regarding the generation of new wastewater discharges from the manufacture of these new battery technologies. However, stakeholders expressed concerns about a resurgence of battery manufacturing in the U.S., particularly related to vanadium redox and electric vehicle batteries. EPA has found it does not fully understand the state of the battery manufacturing industry, new battery technologies, the applicability of the existing ELGs, and the potential for new pollutants in the industry's wastewater discharges. Specifically, EPA's data gaps include:

- Potential future growth of the industry as reliance on electrical storage systems grows.
- What production processes during the manufacture of lithium ion, vanadium redox, and electric vehicle batteries generate wastewater.
- How the wastewater is managed.
- What pollutants are present in any discharges of industrial wastewater.
- Whether current U.S. battery manufacturers have changed, or plan to change, the types of batteries they produce.
- Whether there are other new battery manufacturing facilities being built in the U.S. and the types of batteries they will be producing.

#### **4.1.4 References for Battery Manufacturing**

1. American Honda Motor Company, Inc. 2013a. The 2014 Accord Plug-In. Accessed: June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08242.

2. American Honda Motor Company, Inc. 2013b. 2014 Fit EV. Accessed: June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08243.
3. American Honda Motor Company, Inc. 2014. CR-Z 2015. Accessed: June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08244.
4. American Honda Motor Company, Inc. 2015a. Accord 2015. Accessed: June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08245.
5. American Honda Motor Company, Inc. 2015b. Civic 2015. Accessed: June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08246.
6. American Honda Motor Company, Inc. 2015c. FCX Clarity Specifications. Accessed: June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08247.
7. American Honda Motor Company, Inc. 2015d. 2014 Insight Specifications. Accessed: August 12, 2015. EPA-HQ-OW-2015-0665. DCN 08248.
8. American Vanadium. 2014. Vanadium Flow Batteries. Accessed: September 10, 2014. EPA-HQ-OW-2015-0665. DCN 08249.
9. Bomey, N. 2015. Tesla CEO Elon Musk reveals Powerwall home battery. *Detroit Free Press* (May 1). EPA-HQ-OW-2015-0665. DCN 08250.
10. Clyde Space. 2014. Secondary Batteries. Accessed: September 10, 2014. EPA-HQ-OW-2015-0665. DCN 08251.
11. Energizer. 2010. Nickel Metal Hydride (NiMH) Handbook and Application Manual. EPA-HQ-OW-2015-0665. DCN 08252.
12. Environment Canada. 2014. National Pollutant Release Inventory (NPRI) Online Data Search. Accessed: September 10, 2014. EPA-HQ-OW-2015-0665. DCN 08253.
13. General Motors. 2014a. Spark EV 2015. Accessed: June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08254.
14. General Motors. 2014b. Volt 2015. Accessed: June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08255.
15. Maxell. 2012. Rechargeable Batteries Product Index. Accessed: September 10, 2014. EPA-HQ-OW-2015-0665. DCN 08256.
16. Northwestern University. 2014. Northwestern University Department of Electrical Engineering and Computer Science, Qualitative Reasoning Group. *How do batteries work?* Accessed: September 11, 2014. EPA-HQ-OW-2015-0665. DCN 08257.
17. Patterson, Mary L. 2009. *Anode Materials for Lithium Ion Batteries*. Powerpoint Presentation for the Indiana University Battery Workshop. (November). EPA-HQ-OW-2015-0665. DCN 08258.

18. Ramsey, M. 2014. Tesla confirms Nevada to get battery factory. *Wall Street Journal* (September 4). EPA-HQ-OW-2015-0665. DCN 08259.
19. Salkind, A. J., Klein, M., Bullock, K. R., Pierson, J. R., and Gifford, P. R. 2003. *Batteries, Other Secondary Cells*. Kirk-Othmer Encyclopedia of Chemical Technology. John Wiley & Sons, Inc. (December). EPA-HQ-OW-2015-0665. DCN 08260.
20. St. John, J. 2014. The German-American Vanadium Flow Battery Connection. Greentech Media. (February 24). EPA-HQ-OW-2015-0665. DCN 08261.
21. Tesla Motors. 2015a. Tesla Energy. Accessed: May 19, 2015. EPA-HQ-OW-2015-0665. DCN 08262.
22. Tesla Motors. 2015b. Tesla Gigafactory. Accessed: May 19, 2015. EPA-HQ-OW-2015-0665. DCN 08263.
23. Tesla Motors. 2015c. Model S Specifications. Accessed: August 11, 2015. EPA-HQ-OW-2015-0665. DCN 08264.
24. Toyota. 2012. 2013 Scion iQ EV. Accessed: September 9, 2014. EPA-HQ-OW-2015-0665. DCN 08265.
25. Toyota. 2015a. Avalon 2015. Accessed June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08266.
26. Toyota. 2015b. Camry 2015. Accessed June 11, 2015. EPA-HQ-OW-2015-0665. DCN 8267.
27. Toyota. 2015c. Highlander 2015. Accessed June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08268.
28. Toyota. 2015d. Prius 2015. Accessed June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08269.
29. Toyota. 2015e. Prius c 2015. Accessed June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08270.
30. Toyota. 2015f. 2015 Prius Plug-In Hybrid. Accessed June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08271.
31. Toyota. 2015g. Prius v 2015. Accessed June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08272.
32. U.S. EPA. 1984a. *Development Document for Effluent Limitations Guidelines and Standards for the Battery Manufacturing Point Source Category, Volume I*. Washington, D.C. (September). EPA 440/1-84-067. EPA-HQ-OW-2015-0665. DCN 08273.
33. U.S. EPA. 1984b. *Development Document for Effluent Limitations Guidelines and Standards for the Battery Manufacturing Point Source Category, Volume II*.

Washington, D.C. (September). EPA 440/1-84-067. EPA-HQ-OW-2015-0665. DCN 08274.

34. U.S. EPA. 2013. *Response to Comments for the Final 2010 Effluent Guidelines Program Plan*. Washington, D.C. (May). EPA-HQ-OW-2010-0824-0196.
35. Vacuum Products Canada, Inc. 2013. Lithium Ion Battery Manufacturing. Accessed: September 10, 2014. EPA-HQ-OW-2015-0665. DCN 08275.

## **4.2 Electrical and Electronic Components (40 CFR Part 469)**

At a National Association of Clean Water Agencies (NACWA) National Pretreatment and Pollution Prevention Workshop in 2014, stakeholders raised concerns regarding the applicability of the Electrical and Electronic Components Effluent Limitations Guidelines and Standards (E&EC ELGs) (40 CFR Part 469) to the manufacture of sapphire crystals. Sapphire crystals are used in an increasing number of electronic devices. Further, stakeholders expressed concern related to new pollutants of concern, specifically the use of nanomaterials in the manufacturing of electronics that EPA did not consider during the development of the E&EC ELGs. As a result, as part of the 2015 Annual Review, EPA began reviewing the E&EC ELGs, primarily as they relate to sapphire crystal manufacturing, to determine whether recent changes within the E&EC industry are resulting in new wastewater discharges or pollutants of concern.

### **4.2.1 *Overview of the Electrical and Electronic Components ELGs in Relation to Sapphire Crystal Manufacturing***

In 1983, EPA promulgated the E&EC ELGs, which regulate pollutant discharges from four subcategories: semiconductors, electronic crystals, cathode ray tubes, and luminescent materials. Subpart B specifically covers discharges resulting from the manufacture of electronic crystals. Subpart B defines electronic crystals as “*crystals or crystalline material which because of their unique structural and electronic properties are used in electronic devices. Examples of these crystals are crystals comprised of quartz, ceramic, silicon, gallium arsenide, and indium arsenide.*” In addition, manufacture of electronic crystals is defined in this subpart as “*the growing of crystals and/or the production of crystal wafers for use in the manufacture of electronic devices.*” While the definition of electronic crystals does not specifically mention sapphire crystals, sapphire crystals that are grown and made into wafers are used in the manufacture of electronic devices and thus meet the definition of electronic crystals. Therefore, 40 CFR Part 469 Subpart B is applicable to wastewater discharges generated from growing sapphire crystals and producing sapphire crystal wafers. Subpart B includes concentration-based effluent limitations for total toxic organics (TTO), arsenic, fluoride, total suspended solids (TSS), and pH for both new and existing direct and indirect dischargers.

In developing the ELGs, EPA identified four main types of electronic crystals: piezoelectric crystals (primarily quartz), lithium niobate, liquid crystals, and semiconducting crystals (primarily silicon, gallium arsenide, and gallium phosphate) (U.S. EPA, 1983). At the time, EPA identified only one sapphire crystal manufacturing facility.

### **4.2.2 *Overview of Sapphire Crystals Manufacturing and Wastewater Generation***

Sapphire, the common name of the mineral corundum, is an aluminum oxide ( $\alpha\text{-Al}_2\text{O}_3$ ) gemstone that is widely used in industrial applications due to its physical properties (Dinh, 2011). After diamonds and silicon carbide, sapphire is one of the hardest materials; it is chemically inert and transmits light effectively (PR Hoffman, 2013). These properties make sapphire crystals a commonly used substrate in light-emitting diodes (LEDs) and in solar cells, hard drives, lasers, and other optical applications.



### ***Sapphire Crystal Growth***

While sapphire crystals have been produced for over a century (Harris, 2004), they were not widely used for electronics until the mid-1980s, when industry began using them as substrates in silicon-on-sapphire microprocessors (Peregrine Semiconductor Corporation, 2012). Due to the increased demand for sapphire crystals for smartphones, LEDs, and other electronic devices and components, sapphire crystal manufacturing has grown dramatically in recent years (Wray, 2011). The industry manufactures synthetic sapphire crystals for industrial applications by a variety of methods, depending on the end product desired. While methods vary, they all begin with molten aluminum oxide ( $\text{Al}_2\text{O}_3$ ) that is formed into a large synthetic sapphire crystal, called a boule (ClearlySapphire.com, 2014).

The generally recognized methods of sapphire crystal formation are described below. All of the methods are commonly used for sapphire crystal production, except the Edge-Defined Film-Fed Growth (EFG) method, which does not produce crystals of high optical quality. The sapphire crystal growth processes do not generate wastewater; however, they may produce non-contact cooling water.

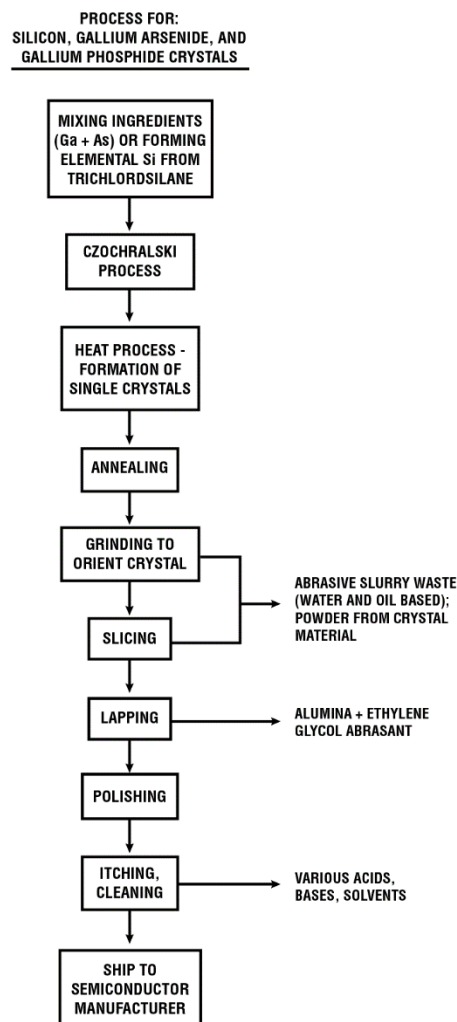
- *Czochralski Method.* In the Czochralski method, aluminum oxide is melted in a crucible and a sapphire seed crystal is dipped into it, rotated, and pulled out of the melt, promoting crystal growth (Harris, 2004). The growth process takes weeks, and the resulting crystal is used in lasers, transparent electronics, high temperature process windows, and optical applications (ClearlySapphire.com, 2014).
- *EFG Method.* In the EFG method, after aluminum oxide is melted in a crucible it moves up a molybdenum die, used to shape the crystal, at the bottom of the crucible by capillary attraction. A seed crystal is dipped into the melt on top of the die and the seed is pulled out, promoting crystal formation (Harris, 2004). The crystals created using this method are typically used in applications that do not require high quality crystals. (ClearlySapphire.com, 2014).
- *Gradient Solidification.* In gradient solidification, a hemispheric crucible with a sapphire seed in the bottom is filled with alumina. A temperature gradient is created in a vacuum and the seed crystal is partially melted. The slow cooling of the alumina promotes sapphire crystallization (Harris, 2004).
- *Heat Exchanger Method.* The heat exchanger method begins with a sapphire seed crystal placed in a crucible. The crucible is then filled with pure alumina crackle. The crackle is melted, while partially melting the seed crystal. The seed is cooled slowly and the resulting crystal is of high quality (ClearlySapphire.com, 2014; Harris, 2004).
- *Kyropoulos Method.* The Kyropoulos method begins with melting high-purity aluminum oxide powder in a crucible. A seed crystal forms at the bottom and is drawn out under a highly controlled thermal gradient. The resulting boules are highly pure and can be used for electronics and optics (ClearlySapphire.com, 2014).
- *Verneuil Flame-fusion Crystal Growth Method.* The Verneuil method, developed in 1902, was the first method developed for industrial sapphire production. It uses powdered aluminum oxide ( $\text{Al}_2\text{O}_3$ ) and chromium oxide ( $\text{Cr}_2\text{O}_3$ ). The powders are nearly melted and dropped onto an alumina pedestal. The seed crystal that forms is

removed from the melt and rotated (Harris, 2004). The resulting crystals have internal striations, so they have limited use (ClearlySapphire.com, 2014).

### ***Sapphire Crystal Wafer Production***

Production of sapphire crystal wafers for electronic applications begins with a sapphire boule that can be over one hundred kilograms. The boule is sliced into wafers at a defined angle that depends on the end-use. The wafers are then lapped, ground, polished, and cleaned with a wet chemical cleaner (PR Hoffman, 2013). These polished wafers are used for electronic displays, semiconductors, LEDs, and lenses whose performance can be altered by surface features (Dinh, 2011).

The processes used in the manufacture of sapphire crystal wafers are generally the same as in the manufacture of silicon crystal wafers, from the formation of a crystalline boule, to the slicing, lapping, grinding, polishing, and cleaning. Figure 4-3 outlines the silicon wafer production process. As indicated in the diagram, several of the wafer production processes can generate wastewater in the form of slurries and acids. Because silicon is not as hard as sapphire, the chemicals and slurries used in these processes may be different. However, the chemicals used in the preparation of sapphire wafers have not been studied as thoroughly as silicon wafers, so available information is limited (Kirby, 2008).



**Figure 4-3. Basic Manufacturing Processes for Electronic Crystals (U.S. EPA, 1983)**

Lapping, grinding, and polishing of sapphire crystals often require liquid media and an abrasive (Ng and Dumm, 2012). Wafer *lapping* typically uses an abrasive liquid slurry mixture with lapping plates to grind off any irregularities left after slicing, and results in a smooth, unpolished surface (Dinh, 2011). Wafer *grinding* may also use liquid slurries, but is more typically used for the coarse removal of material. Slurries used in these methods can be oil- or water-based and could result in wastewater production.

Sapphire wafer *polishing* involves any of several processes, including: mechanical polishing, wet chemical-mechanical polishing, dry chemical-mechanical polishing, colloidal silica polishing, and contactless chemical mechanical polishing. Chemical mechanical polishing is frequently used on sapphire crystals and uses chemical slurries for corrosion and abrasives (often alumina) for mechanical friction (Zhang, et al., 2010; Dinh, 2011). Other slurries used for the final steps of sapphire crystal production include alpha-alumina-based, scale silica-based, polycrystalline diamond, nanodiamond, and colloidal silica slurries (Grish, 2011).

Sapphire *etching* commonly uses sulfuric and phosphoric acids (Kirby, 2008), and *patterning* of sapphire uses strong acids (Chang, et al., 2013).

Liquid-based slurries and chemicals used in the final processing of sapphire crystal wafers may result in chemical waste discharges. EPA reported that in the 1980s, semiconductor production used 166 million gallons of water per day, which is treated prior to discharge. Sapphire is now commonly used as a substrate for semiconductors, but the current state of wastewater discharges from sapphire crystal wafer production is not clear. More recent data indicate that chemical and mechanical processing of electronic wafers in general (i.e., not just sapphire wafers) can produce six liters of slurry waste per individual wafer (Belongia, 1999).

### ***Sapphire Crystal Manufacturing in the U.S.***

EPA identified several companies that manufacture, process, and finish sapphire crystals in the U.S. These companies include Saint-Gobain Crystals, Rubicon Technology, and GT Advanced Technologies (GTAT, 2013; Saint-Gobain, 2009; Sterling, 2011).<sup>47</sup>

#### **4.2.3 Summary of Findings from EPA's Review of the Electrical and Electronic Components ELGs in Relation to Sapphire Crystal Manufacturing**

Sapphire crystals are used in an increasing number of electronic devices, and stakeholders have recently raised concerns regarding the applicability of E&EC ELGs and new pollutants discharged from sapphire crystal manufacturing. EPA's review of the E&EC ELGs determined that Subpart B - Electronic Crystals covers wastewater discharges generated from growing sapphire crystals and producing sapphire crystal wafers. While the ELGs do not specify sapphire crystals, they are a crystal or crystalline material used in the manufacture of electronic devices because of their unique structural and electronic properties, and therefore meet the applicability of that Subpart.

- Preliminary research indicates that sapphire crystal wafer production usually generates wastewater in the form of slurries and acids. The chemicals used in the preparation of sapphire wafers have not been thoroughly studied, so available information is limited. As a result, EPA has not yet determined the pollutants of concern or current wastewater management practices. Further, public comments expressed concern about pollutants that EPA did not consider during the development of the existing E&EC ELGs, specifically, nanomaterials. EPA confirmed that nanodiamonds are used in sapphire crystal polishing slurries. In addition, EPA identified a number of facilities in the U.S. that are likely manufacturing sapphire crystals and wafers. To date, EPA's review has not definitively determined whether the manufacture of sapphire crystals and wafers results in the discharge of pollutants not covered by 40 CFR Part 469. EPA has found it does not fully understand the state of the E&EC industry in the U.S., including advances in technology and manufacturing processes, and potential new pollutants of concern present in wastewater discharge. Specifically, EPA's data gaps include: What additional pollutants of concern may be present in discharges from sapphire crystal manufacturing that are not regulated by the existing ELGs.

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<sup>47</sup> This list is not exhaustive; it includes facilities that were easily identified through internet research.

- How permitting authorities are currently addressing discharges from facilities that manufacture sapphire crystals.
- What manufacturing processes generate wastewater, and how the wastewater is treated, reused, and/or discharged.
- How many facilities in the U.S. are manufacturing sapphire crystals and what is the volume of production.

#### **4.2.4 References for Electrical and Electronic Components**

1. Belongia, B. M., Sun, Y., Vaygents, J. C., Raghavan, S., and O'Sullivan, J. 1999. Treatment of CMP Waste Streams. Arizona Board of Regents for the University of Arizona. EPA-HQ-OW-2015-0665. DCN 08292.
2. Chang, C-M., Shiao, M-H., Chiang, D., Yang, C-T., Huang, M-J., and Hsueh, W-J. 2013. Submicron-Size Patterning on the Sapphire Substrate Prepared by Nanosphere Lithography and Nanoimprint Lithography Techniques. *Met. Mater. Int.* 19(4): 869-874. EPA-HQ-OW-2015-0665. DCN 08293.
3. ClearlySapphire.com. 2014. Growth. EPA-HQ-OW-2015-0665. DCN 08294.
4. Dinh, H. 2011. Polishing of Sapphire Substrates. EPA-HQ-OW-2015-0665. DCN 08295.
5. GRISH. 2011. Beijing Grish Hitech Co., Ltd. Sapphire Wafer Lapping. EPA-HQ-OW-2015-0665. DCN 08296.
6. GT Advanced Technologies. 2013. Worldwide Locations. EPA-HQ-OW-2015-0665. DCN 08297.
7. Harris, D.C. 2004. A Century of Sapphire Crystal Growth. Proceedings of the 10th DoD Electromagnetic Windows Symposium. Norfolk, Virginia. (May). EPA-HQ-OW-2015-0665. DCN 08298.
8. Kirby, K.W. 2008. Processing of Sapphire Surfaces for Semiconductor Device Applications. Master of Science Thesis, Pennsylvania State University Graduate School College of Engineering. EPA-HQ-OW-2015-0665. DCN 08299.
9. Leavitt, P. 2014. Apple factory in Mesa ramps up sapphire production. EPA-HQ-OW-2015-0665. DCN 08300.
10. Ng, K-Y., and Dumm, T. 2012. Advancements in Lapping and Polishing with Diamond Slurries. CS MANTECH Conference, April 23-26 2012, Boston, Massachusetts. EPA-HQ-OW-2015-0665. DCN 08301.
11. Peregrine Semiconductor Corporation. 2012. Driving the RF SOI Revolution. EPA-HQ-OW-2015-0665. DCN 08302.
12. PR Hoffman. 2013. PR Hoffman Machine Products. Sapphire Wafer Processing. EPA-HQ-OW-2015-0665. DCN 08303.

13. Saint-Gobain. 2009. Saint-Gobain Crystals Achieves ISO 9001 Certification. EPA-HQ-OW-2015-0665. DCN 08304.
14. Sterling, J. 2011. Rubicon Technology: a high tech start-up successfully practices strategic focus. EPA-HQ-OW-2015-0665. DCN 08305.
15. U.S. EPA. 1983. *Development Document for the Electrical and Electronic Components Point Source Category: Phase I*. Washington, D.C. (April). EPA-HQ-OW-2015-0665. DCN 08306.
16. Zhang, Z., Liu, W., Song, Z., and Hu, X. 2010. Two-Step Chemical Mechanical Polishing of Sapphire Substrate. *Journal of the Electrochemical Society*. 157 (6): H688-H691. EPA-HQ-OW-2015-0665. DCN 08307.
17. Wray, P. 2011. Sapphire crystal makers' business on upswing. EPA-HQ-OW-2015-0665. DCN 08308.

### 4.3 **2-Mercaptobenzothiazole (MBT)**

EPA received a public comment on its *Preliminary 2012 Effluent Guidelines Program Plan* from the Association of Clean Water Administrators (ACWA) concerning the environmental release of 2-mercaptobenzothiazole (MBT). The comment cited research indicating that the chemical is highly toxic to aquatic life, slow to biodegrade, and, because it is released as tires wear, is pervasive in the environment. The comment expressed concern that this chemical is not codified in 40 CFR Part 401.15<sup>48</sup> as a toxic pollutant. The commenter also asserts that the chemical is not captured by the TRI database, although EPA notes that this is not accurate (U.S. EPA, 2014).<sup>49</sup>

In its response to the comment, EPA noted that the effluent guidelines program under the Clean Water Act focuses on the discharge of pollutants from industrial wastewater sources, and that it is not necessarily the best program for addressing the environmental release of MBT from automobile tires wearing down from use on roads. Other efforts, such as pollution prevention and product substitution, under statutes such as the Toxic Substances Control Act (TSCA), may be more appropriate to address the potential issues associated with MBT (U.S. EPA, 2014). However, as a direct follow-up to the comment, EPA looked into this chemical as part of the 2015 Annual Review, focusing specifically on its use in tire manufacturing, and any associated potential discharges. MBT is used in other industries, such as sodium and zinc salts of MBT, which are active ingredients in fungicides, microbiocides, and bacteriostats (U.S. EPA, 1994). However, these uses were outside of the scope of this review.

#### 4.3.1 ***Overview of Existing ELGs Related to MBT and Rubber Manufacturing***

The Rubber Manufacturing ELGs (40 CFR Part 428), specifically Subpart A, Tire and Inner Tube Plants, cover discharges from tire manufacturing. This subpart includes discharge limitations for TSS, oil and grease, and pH, but does not include limitations on toxic pollutants. EPA promulgated the Rubber Manufacturing ELGs in 1974 and has not significantly updated them since 1975.

#### 4.3.2 ***Overview of MBT***

The following subsections discuss MBT's chemical properties, use, and environmental release.

##### ***MBT Properties***

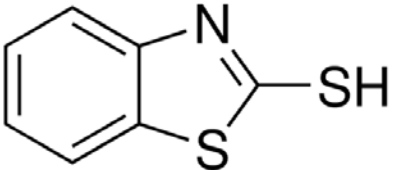
MBT is a beige or light yellow powder that is insoluble in water. Table 4-3 below presents MBT's properties.

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<sup>48</sup> Provides a list of toxic pollutants designated pursuant to section 307(a)(1) of the Clean Water Act. Part 401 provides general provisions, such as definitions and test procedures that apply to additional regulations that implement the Clean Water Act.

<sup>49</sup> EPA notes that MBT was added to the TRI list of chemicals in 1995 (U.S. EPA, 2015).

**Table 4-3. Properties of MBT**

Property	Data	Chemical Structure <sup>b</sup>
Molecular Formula	C <sub>7</sub> H <sub>5</sub> NS <sub>2</sub>	
Molecular Weight	167.25	
Melting Point	177-181 °C	
Density	1.42 g/cm <sup>3</sup>	
Flash Point	243 °C	
Water Solubility	<0.1 g/100 mL at 19 °C 0.032 g/100 mL <sup>a</sup>	
CAS Database Reference	149-30-4	

Source: Chemical Book, 2014, unless otherwise specified.

<sup>a</sup> Source for alternative water solubility value: ChemicalLand21.com, 2015.

<sup>b</sup> Source: Sigma-Aldrich, 2015.

### ***MBT's Use in Tires***

Vulcanization is the process by which plastic rubber is converted into the elastic or hard rubber state. The process is brought about by the linking of macro-molecules at reactive sites (U.S. EPA, 1974). Vulcanization improves the mechanical properties of rubber (Rodgers, et al., 2004). In the early 1900s, researchers discovered accelerators that help control the vulcanization process and the number and type of sulfur crosslinks that form. Aniline was the first organic compound used to accelerate the reaction of sulfur with natural rubber. Since then, the industry has developed less toxic aniline derivatives that possess increased acceleration activity. MBT, one such compound, is prepared by heating aniline, carbon disulfide, and sulfur in an autoclave at elevated temperature and pressure. MBT is currently the highest volume organic accelerator used to manufacture rubber tires (Ohm, 2000). However, the use of accelerators in the U.S. has been declining due to longer-lasting tires and reduced number of U.S. manufacturers (Ohm, 2000).

### ***MBT's Release to the Environment***

An emission scenario, published by the Organization for Economic Co-operation and Development (OECD) in 2004, evaluated the sources, use patterns, and release pathways of rubber industry chemical additives to support estimates of environmental releases (OECD, 2004). OECD specifically examined scenarios for formulation and processing emissions to wastewater, formulation and processing emissions to air and soil, and the private use of rubber products by tire abrasion, including emission to surface water and soil. Tire abrasion was the only scenario that resulted in the release of MBT.

EPA's review of available discharge data identified five facilities that reported releases of MBT to TRI in 2013, as shown in Table 4-4 below. None of these facilities are tire manufacturers, though this data set may be limited, as only facilities that manufacture and process more than 25,000 pounds, or otherwise use more than 10,000 pounds of a listed chemical in a given year, report releases to TRI (see Section 2.1 of this report for a discussion of the limitations of TRI data). Further, each of the reported releases of MBT from other types of rubber manufacturing are less than five pounds per year.



EPA identified 12 tire manufacturers (by SIC Code 3011) in the U.S. reporting DMR discharges greater than zero in 2013 (*DMRLTOutput2013\_v1*). None of these facilities reported discharges of MBT. However, MBT is not a regulated pollutant in the Rubber Manufacturing ELGs; therefore, facilities are unlikely to report MBT discharges unless their permit contains specific limitations or monitoring requirements.

**Table 4-4. Facilities Reporting MBT Releases to TRI in 2013**

Point Source Category	NAICS Code and Description	Facility Name and Location	Facility Description	Pounds MBT
Organic chemicals, plastics and synthetic fibers (OCPSF) (40 CFR Part 414)	325199 - All Other Basic Organic Chemical Manufacturing	Emerald Performance Materials LLC, Henry, IL	Produces and markets specialty chemicals for use in aerospace, food, beverages, cosmetics, toothpaste, household products, paint, tires, automobiles, and sports gear, etc. (Emerald Performance Materials, 2006)	5,480
	325998 - All Other Miscellaneous Chemical Product and Preparation Manufacturing	Dober Group, Hazelton, PA	Produces liquids for Dober Chemical's Cooling Systems Division and GreenFloc Division (Dober, 2015).	180
Rubber Manufacturing (40 CFR Part 428)	326299 - All Other Rubber Product Manufacturing	International Automotive Components, Canton, OH	Produces and supplies automotive interior components (IAC, 2015).	5
		Gold Key Processing Inc., Middlefield, OH	Develops and produces black and non-black rubber compounds (GoldKey, 2015).	2.6
	326291 - Rubber Product Manufacturing for Mechanical Use	Cooper Standard Automotive, Inc., Auburn, IN	Produces sealing and trim systems, fuel and brake delivery systems, and anti-vibration control products for the automotive industry (CooperStandard, 2015).	1

Source: *TRILTOutput2013\_v1*

Note: Values are rounded to three significant figures.

### 4.3.3 Summary of Findings from EPA's Review of MBT

Though tire manufacturers use MBT as a vulcanization accelerator, EPA's review of 2013 DMR and TRI data did not identify any discharges of MBT from tire manufacturers, although there may be releases from other industries, including OCPSF and rubber manufacturing in general. In addition, concerns regarding MBT's release to the environment have centered on dust from the abrasion and wear of tires, which is not under the purview of the effluent guidelines program.

### 4.3.4 References for MBT

1. Chemical Book. 2014. 2-Mercaptobenzothiazole. Accessed September 18, 2014. EPA-HQ-OW-2015-0665. DCN 08278.

2. ChemicalLand21.com. 2015. 2-Mercaptobenzothiazole. Accessed June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08279.
3. CooperStandard. 2015. CooperStandard Products and Innovations. EPA-HQ-OW-2015-0665. DCN 08280.
4. Dober. 2015. History. EPA-HQ-OW-2015-0665. DCN 08281.
5. Emerald Performance Materials. 2006. Emerald Performance Materials Home. EPA-HQ-OW-2015-0665. DCN 08282.
6. GoldKey. 2015. GoldKey Processing, Inc. Mixing Technology. EPA-HQ-OW-2015-0665. DCN 08283.
7. IAC. 2015. About International Automotive Components. EPA-HQ-OW-2015-0665. DCN 08284.
8. OECD. 2004. Organisation for Economic Co-Operation and Development. Emission Scenario Document on Additives in Rubber Industry. Series on Emission Scenario Documents No. 6. (June). EPA-HQ-OW-2015-0665. DCN 08285.
9. Ohm, R. F. 2000. Rubber Chemicals. Kirk-Othmer Encyclopedia of Chemical Technology. EPA-HQ-OW-2015-0665. DCN 08286.
10. Rodgers, B., Waddell, W. H., Solis, S. and Klingensmith, W. 2004. Rubber Compounding. Kirk-Othmer Encyclopedia of Chemical Technology. EPA-HQ-OW-2015-0665. DCN 08287.
11. Sigma-Aldrich. 2015. M3302 - 2-Mercaptobenzothiazole. Accessed June 11, 2015. EPA-HQ-OW-2015-0665. DCN 08288.
12. U.S. EPA. 1974. *Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Tire and Synthetic Segment of the Rubber Processing Point Source Category*. Washington D.C. (February). EPA 440/0-174-013. EPA-HQ-OW-2015-0665. DCN 08289.
13. U.S. EPA. 1994. R.E.D. FACTS: *Sodium and Zinc Salts of 2-Mercaptobenzothiazole*. EPA 738-F-94-024. Washington D.C. (September). EPA-HQ-OW-2015-0665. DCN 08290.
14. U.S. EPA. 2014. *Response to Comments for the Preliminary 2012 Effluent Guidelines Program Plan*. Washington, D.C. (September). EPA-HQ-OW-2010-0824-0318.
15. U.S. EPA. 2015. *Changes To The TRI List Of Toxic Chemicals*. Washington, D.C. EPA-HQ-OW-2015-0665. DCN 08291.

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**APPENDIX A**

**EVALUATING DATA QUALITY OF SOURCES SUPPORTING  
THE 2015 ANNUAL REVIEW REPORT**

## **APPENDIX A: EVALUATING DATA QUALITY OF SOURCES SUPPORTING THE 2015 ANNUAL REVIEW REPORT**

### **A.1 Background**

The 2015 Annual Review consisted of three components:

- Conducting a toxicity ranking analysis (TRA) to identify and prioritize for further review those industrial categories whose pollutant discharges pose a substantial hazard to human health and the environment;
- Conducting preliminary category reviews for the industrial categories with the highest hazard potential identified from the TRA; and
- Reviewing additional industrial categories and chemicals, brought to EPA's attention through stakeholder comments and input, to evaluate recent changes within the industries as well as potential new pollutant releases to the environment through industrial wastewater discharge.

This appendix focuses on EPA's evaluation of the data quality for sources supporting the preliminary category reviews and review of additional industrial categories and chemicals brought to its attention through stakeholder comments and input. Note that the data sources and data quality evaluation for the TRA are described in Section 2 of this report.

Specifically, for the 2015 Annual Review, EPA identified 18 industrial categories from the TRA for further review that collectively discharge over 95 percent of the total toxic weighted pounds equivalent (TWPE). Of those, EPA conducted more detailed preliminary category reviews on 11 industrial categories, where the TWPE was attributed to multiple pollutants and facilities. For more information on the preliminary category reviews, see Section 3 of this report.

EPA also began reviewing in more detail two additional point source categories that were not identified in the TRA as categories that collectively discharge over 95 percent of the total TWPE. These categories include Battery Manufacturing (40 CFR Part 461) and Electrical and Electronic Components (40 CFR Part 469), specifically Subpart B Electronic Crystals. In addition, EPA reviewed in more detail 2-Mercaptobenothiazole (MBT), a chemical compound used in tire manufacturing. Tire manufacturing is covered under the Rubber Manufacturing Point Source Category (40 CFR Part 428), Subpart A (Tire and Inner Tube Plants Subcategory). EPA initiated these reviews to address comments received from stakeholders regarding recent changes to these industries as well as potential new pollutant releases to the environment through industrial wastewater discharge. For more information on these reviews, see Section 4 of this report.

EPA collected data, evaluated its usefulness, and documented the usability and quality of the data from the categories of sources used to support these reviews in accordance with the specifications presented in *The Environmental Engineering Support for Clean Water Regulations Programmatic Quality Assurance Project Plan (PQAPP)* (ERG, 2013). The following sections provide detailed information on the data sources used and data quality evaluation applied to support EPA's 2015 Annual Review, specifically related to its preliminary category reviews and three additional category and chemical reviews.

In addition to the categories of sources listed in Section A.2 below, EPA used Toxic Release Inventory (TRI) data and discharge monitoring report (DMR) data downloaded from the DMR Pollutant Loading Tool to support these reviews. EPA documents the quality assurance and criteria of DMR and TRI data in the *Revised Quality Assurance Project Plan for the 2009 Annual Screening-Level Analysis of TRI, ICIS-NPDES, and PCS Industrial Category Discharge Data* (ERG, 2009). EPA has documented the quality assurance and criteria of the DMR Pollutant Loading Tool in Section 5 of the *Technical Users Background Document for the Discharge Monitoring Report (DMR) Pollutant Loading Tool* (U.S. EPA, 2012).

## **A.2 Data Sources**

EPA used the following categories of sources for its preliminary category reviews and reviews of Battery Manufacturing (40 CFR Part 461), Electrical and Electronic Components (40 CFR Part 469), specifically Subpart B Electronic Crystals, and use of MBT in tire manufacturing:

- Conference proceedings, peer-reviewed journals, other academic literature.
- State and local government information provided in telephone calls and email correspondence.
- Federal, state, and local government publications.
- Data and information obtained from industry and trade associations.
- Other (non-industry) publications.

## **A.3 Data Quality Criteria**

EPA used existing data to support analyses of the potential impact of industrial discharges on the environment. EPA obtained the existing data from government and other peer reviewed publications, through direct email or telephone correspondence with industry and state and local government, and through online sources, including company websites. EPA considered the accuracy, reliability, and representativeness of data sources to assess their usability for the 2015 Annual Review, as described in Section 4.3.1 of the *Environmental Engineering Support for Clean Water Regulations PQAPP* (ERG, 2013) and as expanded upon below. EPA also referenced Table 4-2 in the *Environmental Engineering Support for Clean Water Regulations PQAPP* to determine that the sources provided information sufficiently accurate and reliable for use in the 2015 Annual Review (ERG, 2013).

*Accuracy.* EPA assumed that the data and information contained in and supporting government publications, selected conference proceedings, peer-reviewed journal articles, and other academic literature are sufficiently accurate to support the general and/or facility-specific characterization of industries, process operations, and waste streams. EPA considered the data and information obtained from direct correspondence with state and local government regulators sufficiently accurate to characterize and quantify specific wastewater discharges or process operations from individual facilities. EPA also considered industry and other non-industry information, including direct industry correspondence, company websites, and online news articles. The data and information reported by these sources is potentially less accurate than those in government publications or peer-reviewed literature, but provided useful information for qualitative characterization and understanding of industries, process operations, and waste streams.

*Reliability.* Using the following criteria, EPA also evaluated the reliability of collected existing data and information for use in qualitative analyses:

- The scientific work is clearly written, so that all assumptions and methodologies can be identified.
- The variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods, or models are evaluated and characterized.
- The assumptions and methods are consistently applied throughout the analysis, as reported in the source.
- Waste streams, parameters, units, and detection limits (when appropriate) are clearly characterized.
- The governmental or facility contact is reputable and has knowledge of the industry, facility, process operation, or waste streams of interest.

EPA considered data sources that met these criteria sufficiently reliable to support its characterization and understanding of industries, process operations, and waste streams.

*Representativeness.* EPA evaluated existing data and information for use in qualitative analyses based on whether the data provide a national perspective and are relevant to and representative of the industry to which the data are applied, using the following criteria:

- *Relevance:* The data source is relevant to the industry or pollutant group of interest (e.g., the industry description or Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes provided in the data source, when available, match the industry).
- *National applicability:* The data can be applied broadly to provide a national perspective relative to the industry or pollutant group of interest (e.g., the data are characteristic of the industry or pollutant group as a whole).

EPA considered data sources that met these criteria sufficiently representative to support the characterization of industries, process operations, and waste streams. During the course of its preliminary category reviews, EPA obtained certain facility-specific data from correspondence with state and local regulators and/or industry representatives and determined that the data were not representative of the industry as a whole (e.g., the pollutant discharge was associated with a process unique to an individual facility). In such instances, EPA determined that the information was useful for understanding and characterizing wastewater discharges or process operations from specific facilities, which furthered its understanding of the wastewater discharges and operations for the industry as a whole.

#### **A.4 Evaluating Data Quality**

This section describes the data sources in more detail and how they met the evaluation criteria listed above. Table A-1 at the end of this section details the criteria applied and the conclusions reached on each data source.

#### **A.4.1 Conference Proceedings, Peer-Reviewed Journal Articles, Other Academic Literature**

EPA reviewed selected conference proceedings, peer-reviewed journal articles, and other academic literature in support of its reviews of battery manufacturing, sapphire crystal manufacturing, and MBT use in tire manufacturing. EPA applied the data quality criteria established in the *Environmental Engineering Support for Clean Water Regulations PQAPP* (ERG, 2013) and determined that the data and information obtained from conference proceedings, peer-reviewed journals, and other academic literature were sufficiently accurate, reliable, and representative for characterizing battery technologies, process operations and waste streams associated with battery and sapphire crystal manufacturing, and chemical production and use of MBT in tire manufacturing.

#### **A.4.2 State, and local government information provided in telephone calls and email correspondence.**

In support of its preliminary category reviews, EPA collected information through telephone calls and email correspondence with state and local government regulators and representatives regarding wastewater discharges from specific facilities. EPA considers information provided from such informal communications to be anecdotal, but useful for qualitative descriptions, such as general information on industrial sector trends, characterization of industrial wastewater discharges, and available industrial wastewater treatment technologies. From discussions with state and local government representatives, EPA often obtained published information such as NPDES permits and fact sheets; however, EPA evaluated the quality of this published information separately (see Federal, State, and Local Government Publications below).

#### **A.4.3 Federal, State, and Local Government Publications**

EPA reviewed federal, state, and local government publications related to its preliminary category reviews and reviews of battery manufacturing, electronics and electrical component manufacturing, and MBT use in tire manufacturing. Federal Government publications were obtained from the U.S., Canada, and the Organisation for Economic Co-operation and Development (OECD)<sup>1</sup>. These publications included regulations, reports, and supporting documentation related to the specific industrial categories and pollutants of interest. EPA also reviewed state and local government publications, including NPDES permits and fact sheets. EPA used these publications to enhance its understanding of the impact of existing government programs and regulations on the industry or the pollutant group of interest. Using the criteria established in the *Environmental Engineering Support for Clean Water Regulations PQAPP* (ERG, 2013), EPA determined that data and information provided in government publications is sufficiently accurate and reliable to characterize specific wastewater discharges, process operations, waste streams, and pollutant loads, and/or could be applied nationally to generally characterize industrial sector trends or pollutant group of interest.

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<sup>1</sup> OECD is an intergovernmental organization in which representatives of 30 countries in North America, Europe and the Pacific, coordinate on issues of international significance.

#### **A.4.4 Industry and Trade Association Information**

EPA obtained information from direct email or telephone communications with industry to support its preliminary category reviews. This included contacting specific facilities to confirm data supported on DMRs or reported to TRI as well as gather information regarding facility-specific process operations and waste streams. EPA also obtained information from specific battery, sapphire crystals, and tire manufacturing company and industry trade association websites. This included descriptions of process operations and company profile information, for example, the types of products they produce. EPA applied the criteria established in the *Environmental Engineering Support for Clean Water Regulations PQAPP* (ERG, 2013) and determined this information was sufficiently accurate, reliable, and representative of the facilities of interest for use in characterizing industry sector trends and process operations that generate waste streams. EPA also determined that data obtained directly from facility contacts regarding reported DMR or TRI data are sufficiently accurate, reliable, and representative to characterize the facility-specific wastewater discharges and estimate facility-specific pollutant loads.

#### **A.4.5 Other Non-Industry Publications**

EPA obtained information from other non-industry publications including news sites and websites that provide chemical information, in support of its reviews of battery manufacturing, electronics and electrical component manufacturing, and MBT use in tire manufacturing. EPA applied the criteria established in the *Environmental Engineering Support for Clean Water Regulations PQAPP* (ERG, 2013) and determined this information was sufficiently accurate, reliable, and representative for use in characterizing industrial sector trends and understanding the chemical properties of specific pollutants of interest.

#### **A.5 References for Quality Assurance Activities Supporting the 2014 Annual Review Report**

- 1 ERG. 2009. Eastern Research Group, Inc. Revised Quality Assurance Project Plan for the 2009 Annual Screening-Level Analysis of TRI, ICIS-NPDES, and PCS Industrial Category Discharge Data. Chantilly, VA. (September). EPA-HQ-OW-2008-0517-0507.
- 2 ERG. 2013. Eastern Research Group, Inc. Environmental Engineering Support for Clean Water Regulations Programmatic Quality Assurance Project Plan (PQAPP). Chantilly, VA. (May). EPA-HQ-OW-2010-0824-0229.
- 3 U.S. EPA. 2012. *Technical Users Background Document for the Discharge Monitoring Report (DMR) Pollutant Loading Tool. Version 1.0*. Washington, D.C. (January). Available online at: [http://cfpub.epa.gov/dmr/docs/Technical\\_Users\\_Background\\_Doc.pdf](http://cfpub.epa.gov/dmr/docs/Technical_Users_Background_Doc.pdf). EPA-HQ-OW-2014-0170-0203.



### A-1. Data Sources Supporting 2015 Annual Review Analyses

Data Source	Data Quality Criteria		Conclusions on Usability
	Accuracy and Reliability	Representativeness	
Conference Proceedings, Peer-Reviewed Journal Articles, Other Academic Literature	Information is obtained from selected national conference proceedings, peer-reviewed journal articles and other academic literature. All data sources are clearly written, document methodologies and assumptions, and where relevant, describe variability and uncertainty, and characterize waste streams, parameters, units, and detection limits.	Data and information are relevant to the industry or pollutant group to which the data are applied. Data also provide general information about industrial sector trends (e.g., new products and process operations). EPA determined this information could be applied nationally to the relevant sectors or pollutants of interest.	EPA considers this type of data and information sufficiently accurate, reliable, and representative, and therefore, usable to characterize industry operations, waste streams, and wastewater discharge practices.
State and Local Government Information provided in Telephone Calls and Email Correspondence	State and local government representatives provided information on wastewater discharges from specific facilities through telephone calls and email correspondence. EPA considers the information sufficiently accurate and reliable for qualitative descriptions, but anecdotal. EPA requested published or written information to support information provided from informal communication, when available.	Data and information are relevant to the industry to which the data are applied. Though the information gathered from state and local government representatives was generally facility-specific (e.g., verification of facility wastewater discharge data and process operations), EPA determined that the information, when considered collectively, could be applied nationally to facilitate EPA's understanding of the category as a whole.	<p>EPA considers this type of information anecdotal, but sufficiently accurate, reliable, and representative for characterizing facility-specific operations and discharges. EPA also considers this information useful for facilitating its understanding of category-wide industrial sector trends, wastewater discharges, and available wastewater treatment technologies.</p> <p>EPA evaluates the quality of any published documents from state or local governments separately (see Federal, State, and Local Government Publications, below).</p>

### A-1. Data Sources Supporting 2015 Annual Review Analyses

Data Source	Data Quality Criteria		Conclusions on Usability
	Accuracy and Reliability	Representativeness	
Federal, State, Local Government Publications	<p>EPA assumes that all data provided in federal, state, or local government reports and regulations are sufficiently accurate and reliable.</p> <p>All reports, regulations, and supporting documentation are clearly written and document methodologies and assumptions.</p>	<p>EPA verified the representativeness of the data to the industrial sectors of interest using industry descriptions, or when available, applicable SIC or NAICS codes provided in the supporting documentation.</p> <p>All federal government reports, regulations and supporting documentation provide a national perspective related to the industry to which the data are applied. Though the information gathered from state and local government representatives was generally facility-specific (e.g., verification of facility wastewater discharge data and process operations), EPA determined that the information, when considered collectively, could be applied nationally to facilitate EPA's understanding of the category as a whole.</p>	EPA considers this type of data sufficiently accurate, reliable, and representative, and therefore usable to support industry and waste stream characterization as well as estimating pollutant loads.
Industry and Trade Association Information	<p>EPA considers information obtained from industry and trade associations to be less certain than peer-reviewed information, however, EPA determined this information was sufficiently accurate and reliable for characterizing industry trends and operations. All industry data and information was obtained from known industry sources (e.g., directly from facility contacts or from industry trade association or company websites).</p> <p>EPA considers data and information obtained directly from facility contacts regarding reported DMR or TRI data to be accurate and reliable for characterizing facility-specific wastewater discharges and estimating facility-specific loads.</p>	<p>EPA verified the representativeness of the data to the industrial sectors of interest using industry descriptions, or when available, applicable SIC or NAICS codes provided in the supporting documentation.</p> <p>Although much of the information obtained from industry was facility or company-specific, EPA determined it was representative of, and useful for, facilitating EPA's understanding of the category as a whole.</p>	EPA considers this type of data sufficiently accurate, reliable, and representative, and therefore usable for characterizing industrial sector trends, process operations, and waste streams.

### A-1. Data Sources Supporting 2015 Annual Review Analyses

Data Source	Data Quality Criteria		Conclusions on Usability
	Accuracy and Reliability	Representativeness	
Other Non-Industry Publications	EPA considers information obtained from non-industry, non-peer reviewed sources (including news sites and websites that provide chemical information) to be less certain, but useful for general industry or pollutant characterization. All non-industry information was obtained from known sources (e.g., chemical vendors and reputable national news sites such as the Wall Street Journal or Detroit Free Press).	<p>EPA verified the representativeness of the data to the industrial sectors of interest using industry descriptions, or when available, applicable SIC or NAICS codes provided in the supporting documentation.</p> <p>EPA verified the representativeness of the data to the pollutant group of interest using industry CAS numbers.</p>	Data are sufficiently accurate, reliable, and representative, to use for generally characterizing industrial sector trends (new products or processes) or understanding the chemical properties of pollutants of interest.

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**APPENDIX B**

**ADJUSTMENT OF INDIRECT RELEASES OF HYDROGEN SULFIDE**

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**Table B-1. Adjustment of Indirect Releases of Hydrogen Sulfide**

TRI Facility ID	Facility Name	City	State	40 CFR Part	Reported Release (DMR Loading Tool)		Release After Incorporation of POTW Removal (98.64%) (TRILTO <sub>Output2013</sub> ) <sup>a</sup>	
					Indirect Release (Pounds)	Indirect Release (TWPE (lb-eq/yr))	Indirect Release (Pounds)	Indirect Release (TWPE (lb-eq/yr))
55720PTLTCNORTH	SAPPI CLOQUET LLC	CLOQUET	MN	430	175,000	490,000	2,380	6,660
23860STNHP910IN	ROCKTENN CP LLC	HOPEWELL	VA	430	169,000	472,000	2,290	6,420
38109MPCPT543WE	VALERO REFINING CO - TENNESSEE LLC	MEMPHIS	TN	419	33,000	92,400	449	1,260
47902STLYM2245N	TATE & LYLE SAGAMORE	LAFAYETTE	IN	406	29,500	82,600	401	1,120
84103MCLCM474WE	TESORO REFINING & MARKETING CO LLC	SALT LAKE CITY	UT	419	25,000	70,000	340	952
58201JRSMP3630G	J R SIMPLOT CO	GRAND FORKS	ND	407	22,900	64,200	312	873
51442FRMLNINDUS	SMITHFIELD FARMLAND CORP	DENISON	IA	432	22,300	62,500	303	849
28328THLND424RA	SMITHFIELD FARMLAND CORP-CLINTON	CLINTON	NC	432	21,700	60,600	295	825
52404DMCRN1350W	ADM CORN PROCESSING	CEDAR RAPIDS	IA	406	4,700	13,100	63.9	179
53208THLTN123N2	THIELE TANNING	MILWAUKEE	WI	425	2,130	5,960	29	81.1
46947WLSNF35BYP	TYSON FRESH MEATS INC-LOGANSPO RT IN	LOGANSPO RT	IN	432	2,060	5,760	28	78.3
23430GWLTNHIGHW	SMITHFIELD FARMLAND - SMITHFIELD FACILITY (NORTH)	SMITHFIELD	VA	432	1,340	3,750	18.2	51
90744TXCRF2101E	TESORO LOS ANGELES REFINERY	WILMINGTON	CA	415	854	2,390	11.6	32.5
37774STLYMROUTE	TATE & LYLE LOUDON	LOUDON	TN	406	781	2,190	10.6	29.7
31206MCNKR4891M	GRAPHIC PACKAGING INTERNATIONAL INC	MACON	GA	430	351	983	4.77	13.4
21540WSTVC300PR	LUKE PAPER CO	LUKE	MD	430	245	686	3.33	9.33
51442BPNC RURAL	TYSON FRESH MEATS INC	DENISON	IA	432	142	398	1.93	5.41
90509MBLLC3700W	EXXONMOBIL OIL CORP - TORRANCE REFINERY	TORRANCE	CA	419	140	392	1.9	5.33
90748NNPCF2402E	ULTRAMAR INC WILMINGTON REFINERY	WILMINGTON	CA	419	92	258	1.25	3.5
82007FRNTR2700E	FRONTIER REFINING INC	CHEYENNE	WY	419	81	227	1.1	3.08
90748NCLLS1660W	PHILLIPS 66 LOS ANGELES REFINERY WILMINGTON PLANT	WILMINGTON	CA	419	43	120	0.585	1.64
19145TLNTC3144P	PHILADELPHIA ENERGY SOLUTIONS REFINING PHILADELPHIA REFINERY	PHILADELPHIA	PA	419	12	33.6	0.163	0.457

**Table B-1. Adjustment of Indirect Releases of Hydrogen Sulfide**

TRI Facility ID	Facility Name	City	State	40 CFR Part	Reported Release (DMR Loading Tool)		Release After Incorporation of POTW Removal (98.64%) (TRILTO <sub>Output2013</sub> ) <sup>a</sup>	
					Indirect Release (Pounds)	Indirect Release (TWPE (lb-eq/yr))	Indirect Release (Pounds)	Indirect Release (TWPE (lb-eq/yr))
90745NCLCR1520E	PHILLIPS 66 LOS ANGELES REFINERY CARSON PLANT	CARSON	CA	419	10	28	0.136	0.381
94533NHSRB3101B	ANHEUSER-BUSCH LLC - FAIRFIELD BREWERY	FAIRFIELD	CA	503	5	14	0.068	0.19
44035NYLNG1301L	3M ELYRIA	ELYRIA	OH	414	5	14	0.068	0.19
90749RCPRD1801E	BP WEST COAST PRODUCTS LLC CARSON BP CARSON REFINERY	CARSON	CA	419	1	2.8	0.0136	0.0381
<b>Total</b>					<b>511,000</b>	<b>1,430,000</b>	<b>6,950</b>	<b>19,500</b>

a – Section 2.2.2.1 of the 2015 Annual Review Report provides background on the development of the POTW removal for hydrogen sulfide.

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**APPENDIX C**

**SUPPLEMENTAL MATERIALS FOR EAD’S TOXICITY RANKINGS ANALYSIS**

Table C-1: SIC/Point Source Category Crosswalk

Table C-2: SIC Codes Not Assigned to a Point Source Category

Table C-3: NAICS/Point Source Category Crosswalk

Table C-4: NAICS Codes Not Assigned to a Point Source Category

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**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
101	COCOA	SIC	1	Agricultural Production - Crops
111	WHEAT	SIC	1	Agricultural Production - Crops
112	RICE	SIC	1	Agricultural Production - Crops
115	CORN	SIC	1	Agricultural Production - Crops
116	SOYBEANS	SIC	1	Agricultural Production - Crops
119	CASH GRAINS, NEC	SIC	1	Agricultural Production - Crops
131	COTTON	SIC	1	Agricultural Production - Crops
132	TOBACCO	SIC	1	Agricultural Production - Crops
133	SUGARCANE AND SUGAR BEETS	SIC	1	Agricultural Production - Crops
134	IRISH POTATOES	SIC	1	Agricultural Production - Crops
139	CROPS, EXCEPT CASH GRAINS, NEC	SIC	1	Agricultural Production - Crops
161	VEGETABLES AND MELONS	SIC	1	Agricultural Production - Crops
171	BERRY CROPS	SIC	1	Agricultural Production - Crops
172	GRAPES	SIC	1	Agricultural Production - Crops
173	TREE NUTS	SIC	1	Agricultural Production - Crops
174	CITRUS FRUITS	SIC	1	Agricultural Production - Crops
175	DECIDUOUS TREE FRUITS	SIC	1	Agricultural Production - Crops
179	FRUITS AND TREE NUTS, NEC	SIC	1	Agricultural Production - Crops
181	ORNAMENTAL NURSERY PRODUCTS	SIC	1	Agricultural Production - Crops
182	FOOD CROPS GROWN UNDER COVER	SIC	1	Agricultural Production - Crops
191	GENERAL FARMS, PRIMARILY CROP	SIC	1	Agricultural Production - Crops
211	BEEF CATTLE FEEDLOTS	PSC	412	Concentrated Animal Feeding Operations (CAFO)
212	BEEF CATTLE, EXCEPT FEEDLOTS	PSC	412	Concentrated Animal Feeding Operations (CAFO)
213	HOGS	PSC	412	Concentrated Animal Feeding Operations (CAFO)
214	SHEEP AND GOATS	PSC	412	Concentrated Animal Feeding Operations (CAFO)
219	GENERAL LIVESTOCK, NEC	PSC	412	Concentrated Animal Feeding Operations (CAFO)
241	DAIRY FARMS	PSC	412	Concentrated Animal Feeding Operations (CAFO)
251	BROIL, FRY AND ROAST CHICKENS	PSC	412	Concentrated Animal Feeding Operations (CAFO)
252	CHICKEN EGGS	PSC	412	Concentrated Animal Feeding Operations (CAFO)
253	TURKEY AND TURKEY EGGS	PSC	412	Concentrated Animal Feeding Operations (CAFO)
254	POULTRY HATCHERIES	PSC	412	Concentrated Animal Feeding Operations (CAFO)
259	POULTRY AND EGGS, NEC	PSC	412	Concentrated Animal Feeding Operations (CAFO)
271	FUR-BEARING ANIMALS & RABBITS	SIC	2	Agricultural Production - Livestock



**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
272	HORSES AND OTHER EQUINES	PSC	412	Concentrated Animal Feeding Operations (CAFO)
273	ANIMAL AQUACULTURE	PSC	451	Aquatic Animal Production Industry
279	ANIMAL SPECIALTIES, NEC	SIC	2	Agricultural Production - Livestock
291	FARMS, PRIMARILY LIVESTOCK	SIC	2	Agricultural Production - Livestock
711	SOIL PREPARATION SERVICES	SIC	7	Agricultural Services
721	CROP PLANTING & PROTECTION	SIC	7	Agricultural Services
722	HARVESTING, PRIMARILY MACHINE	SIC	7	Agricultural Services
723	CROP PREP SERVICES FOR MARKET	SIC	7	Agricultural Services
724	COTTON GINNING	SIC	7	Agricultural Services
741	VET SERVICES FOR LIVESTOCK	PSC	460	Health Services Industries
742	VET SERV FOR ANIMAL SPECIALTY	PSC	460	Health Services Industries
751	LIVESTOCK SERVICES, EXCEPT VET	SIC	7	Agricultural Services
752	ANIMAL SPECIAL SERV EXCEPT VET	SIC	7	Agricultural Services
761	FARM LABOR CONTRACT & CREW	SIC	7	Agricultural Services
762	FARM MANAGEMENT SERVICES	SIC	7	Agricultural Services
781	LANDSCAPE COUNSELING AND PLAN	SIC	7	Agricultural Services
782	LAWN AND GARDEN SERVICES	SIC	7	Agricultural Services
783	ORNAMENTAL SHRUB AND TREE SERV	SIC	7	Agricultural Services
811	TIMBER TRACTS	SIC	8	Forestry
831	FOREST PRODUCTS	SIC	8	Forestry
851	FORESTRY SERVICES	SIC	8	Forestry
912	FINFISH	SIC	9	Fishing, Hunting, & Trapping
913	SHELLFISH	SIC	9	Fishing, Hunting, & Trapping
919	MISCELLANEOUS MARINE PRODUCTS	SIC	9	Fishing, Hunting, & Trapping
921	FISH HATCHERIES AND PRESERVES	PSC	451	Aquatic Animal Production Industry
971	HUNT & TRAP & GAME PROPOGATION	SIC	9	Fishing, Hunting, & Trapping
1011	IRON ORES	PSC	440	Ore mining and dressing
1021	COPPER ORES	PSC	440	Ore mining and dressing
1031	LEAD AND ZINC ORES	PSC	440	Ore mining and dressing
1041	GOLD ORES	PSC	440	Ore mining and dressing
1044	SILVER ORES	PSC	440	Ore mining and dressing
1061	FERROALLOY ORES, EXCL VANADIUM	PSC	440	Ore mining and dressing
1081	METAL MINING SERVICES	PSC	440	Ore mining and dressing
1094	URANIUM-RADIUM-VANADIUM ORES	PSC	440	Ore mining and dressing

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
1099	METAL ORES, NEC	PSC	440	Ore mining and dressing
1221	BITUMINOUS COAL & LIG, SURFACE	PSC	434	Coal mining
1222	BITUMINOUS COAL & LIG, UNDERGR	PSC	434	Coal mining
1231	ANTHRACITE MINING	PSC	434	Coal mining
1241	COAL MINING SERVICE	SIC	12	Coal Mining - SIC 12
1311	CRUDE PETROLEUM & NATURAL GAS	PSC	435	Oil & Gas Extraction
1321	NATURAL GAS LIQUIDS	SIC	13	Natural Gas Liquids
1381	DRILLING OIL AND GAS WELLS	PSC	435	Oil & Gas Extraction
1382	OIL AND GAS FIELD EXPLORATION	PSC	435	Oil & Gas Extraction
1389	OIL AND & FIELD SERVICES, NEC	PSC	435	Oil & Gas Extraction
1411	DIMENSION STONE	PSC	436	Mineral Mining and Processing
1422	CRUSHED AND BROKEN LIMESTONE	PSC	436	Mineral Mining and Processing
1423	CRUSHED AND BROKEN GRANITE	PSC	436	Mineral Mining and Processing
1429	CRUSHED AND BROKEN STONE, NEC	PSC	436	Mineral Mining and Processing
1442	CONSTRUCTION SAND AND GRAVEL	PSC	436	Mineral Mining and Processing
1446	INDUSTRIAL SAND	PSC	436	Mineral Mining and Processing
1455	KAOLIN AND BALL CLAY	PSC	436	Mineral Mining and Processing
1459	CLAY, CERAMIC & REFRAC MAT NEC	PSC	436	Mineral Mining and Processing
1474	POTASH, SODA & BORATE MINERALS	PSC	436	Mineral Mining and Processing
1475	PHOSPHATE ROCK	PSC	436	Mineral Mining and Processing
1479	CHEM & FERT MINERA MINING, NEC	PSC	436	Mineral Mining and Processing
1481	NONMETAL MINERAL (EXCEPT FUELS	PSC	436	Mineral Mining and Processing
1499	MISC NONMETAL MINERALS, NEC	PSC	436	Mineral Mining and Processing
1521	CONTRACTORS-SINGLE FAMILY HOUS	SIC	15	General Building Contractors
1522	GEN CONTRACT-RES, NOT SINFA	SIC	15	General Building Contractors
1531	OPERATIVE BUILDERS	SIC	15	General Building Contractors
1541	GEN CONTRACT-INDUST. BLDGS.	SIC	15	General Building Contractors
1542	GEN CONTRACT, NON-RES BLDGS.	SIC	15	General Building Contractors
1611	HWY & ST CONST., EXC. ELEV HWY	SIC	16	Heavy Construction, Except Building
1622	BRIDGE, TUNNEL & ELEV HWY CONS	SIC	16	Heavy Construction, Except Building
1623	H2O, SEW, PIPE & COM. & POWR	SIC	16	Heavy Construction, Except Building
1629	HEAVY CONSTRUCTION, NEC	PNC	NA	Construction and Development
1711	PLUMB, HEAT & AIR CONDITIONING	SIC	17	Special Trade Contractors
1721	PAINTING AND PAPER HANGING	SIC	17	Special Trade Contractors

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
1731	ELECTRICAL WORK	SIC	17	Special Trade Contractors
1741	MASONRY, STONE SET, STONE WORK	SIC	17	Special Trade Contractors
1742	PLSTR, DRYWALL, ACOUS, & INSUL	SIC	17	Special Trade Contractors
1743	TERRAZZO, TILE, MARBLE, MOSAIC	SIC	17	Special Trade Contractors
1751	CARPENTRY WORK	SIC	17	Special Trade Contractors
1752	FLOOR LAY & OTHER FLOOR WORK	SIC	17	Special Trade Contractors
1761	ROOF, SIDE & SHEET METAL WORK	SIC	17	Special Trade Contractors
1771	CONCRETE WORK	SIC	17	Special Trade Contractors
1781	WATER WELL DRILLING	SIC	17	Special Trade Contractors
1791	STRUCTURAL STEEL ERECTION	SIC	17	Special Trade Contractors
1793	GLASS AND GLAZING WORK	SIC	17	Special Trade Contractors
1794	EXCAVATION WORK	SIC	17	Special Trade Contractors
1795	WRECKING AND DEMOLITION WORK	SIC	17	Special Trade Contractors
1796	INST OR ERECTION OF BLDG EQUIP	SIC	17	Special Trade Contractors
1799	SPECIAL TRADE CONTRACTORS, NEC	SIC	17	Special Trade Contractors
2011	MEAT PACKING PLANTS	PSC	432	Meat and Poultry Products
2013	SAUSAGES & PREPARED MEAT PROD	PSC	432	Meat and Poultry Products
2015	POULTRY SLAUGHTERING & PROCESS	PSC	432	Meat and Poultry Products
2021	CREAMERY BUTTER	PSC	405	Dairy products processing
2022	CHEESE, NATURAL AND PROCESSED	PSC	405	Dairy products processing
2023	CONDENSED AND EVAPORATED MILK	PSC	405	Dairy products processing
2024	ICE CREAM AND FROZEN DESSERTS	PSC	405	Dairy products processing
2026	FLUID MILK	PSC	405	Dairy products processing
2032	CANNED SPECIALTIES	PNC	NA	Miscellaneous Foods and Beverages
2033	CANNED FRUITS, VEG, PRES, JAM	PSC	407	Fruits and vegetable processing
2034	DEHYDRATED FRUITS, VEG, SOUPS	PNC	NA	Miscellaneous Foods and Beverages
2035	PICKLED FRTS & VEG. SAUCES	PSC	407	Fruits and vegetable processing
2037	FROZEN FRTS, FRT JUICES & VEG	PSC	407	Fruits and vegetable processing
2038	FROZEN SPECIALTIES, NEC	PNC	NA	Miscellaneous Foods and Beverages
2041	FLOUR & OTHER GRAIN MILL PROD	PSC	406	Grain mills manufacturing
2043	CEREAL BREAKFAST FOODS	PSC	406	Grain mills manufacturing
2044	RICE MILLING	PSC	406	Grain mills manufacturing
2045	BLENDED AND PREPARED FLOUR	PSC	406	Grain mills manufacturing
2046	WET CORN MILLING	PSC	406	Grain mills manufacturing

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
2047	DOG AND CAT FOOD	PSC	406	Grain mills manufacturing
2048	PREP FEEDS & INGRED FOR ANIMA	SIC	20	Food & Kindred Products
2051	BREAD & OTHER BAKERY PRODUCTS	PNC	NA	Miscellaneous Foods and Beverages
2052	COOKIES AND CRACKERS	PNC	NA	Miscellaneous Foods and Beverages
2053	FROZEN BAKERY PRODUCTS	PNC	NA	Miscellaneous Foods and Beverages
2061	CANE SUGAR, EXCEPT REFINED ONLY	PSC	409	Sugar processing
2062	CANE SUGAR REFINING	PSC	409	Sugar processing
2063	BEET SUGAR	PSC	409	Sugar processing
2064	CANDY & OTHER CONFECTION PROD	PNC	NA	Miscellaneous Foods and Beverages
2066	CHOCOLATE AND COCOA PRODUCTS	PNC	NA	Miscellaneous Foods and Beverages
2067	CHEWING GUM	PNC	NA	Miscellaneous Foods and Beverages
2068	SALTED & ROASTED NUTS & SEEDS	PNC	NA	Miscellaneous Foods and Beverages
2074	COTTONSEED OIL MILLS	PNC	NA	Miscellaneous Foods and Beverages
2075	SOYBEAN OIL MILLS	PNC	NA	Miscellaneous Foods and Beverages
2076	VEG. OIL MILLS, EXCEPT CORN	PNC	NA	Miscellaneous Foods and Beverages
2077	ANIMAL AND MARINE FATS & OILS	PSC	432	Meat and Poultry Products
2079	SHORT, TABLE OILS, MARGERINE	PNC	NA	Miscellaneous Foods and Beverages
2082	MALT BEVERAGES	PNC	NA	Miscellaneous Foods and Beverages
2083	MALT	PNC	NA	Miscellaneous Foods and Beverages
2084	WINES, BRANDY & BRANDY SPIRIT	PNC	NA	Miscellaneous Foods and Beverages
2085	DIST, RECTIFIED & BLENDED LIQ	PNC	NA	Miscellaneous Foods and Beverages
2086	BOT & CAN SOFT DRNK & CARB WA	PNC	NA	Miscellaneous Foods and Beverages
2087	FLAV EXTR & FLAV SYRUPS, NEC	PNC	NA	Miscellaneous Foods and Beverages
2091	CANNED & CURED FISH & SEAFOOD	PSC	408	Canned and preserved seafood
2092	FRE OR FROZ PCK FISH, SEAFOOD	PSC	408	Canned and preserved seafood
2095	ROASTED COFFEE	PNC	NA	Miscellaneous Foods and Beverages
2096	POTATO CHIPS & SIMILAR SNACKS	PSC	407	Fruits and vegetable processing
2097	MANUFACTURED ICE	PNC	NA	Miscellaneous Foods and Beverages
2098	MACARONI, SPAGH, VERMI, NOODL	PNC	NA	Miscellaneous Foods and Beverages
2099	FOOD PREPARATIONS, NEC	PNC	NA	Miscellaneous Foods and Beverages
2111	CIGARETTES	PNC	NA	Tobacco Products
2121	CIGARS	PNC	NA	Tobacco Products
2131	TOBACCO (CHEW & SMOK) & SNUFF	PNC	NA	Tobacco Products
2141	TOBACCO STEMMING AND REDRYING	PNC	NA	Tobacco Products

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
2211	BROAD WOVEN FABRIC MILLS, COTT	PSC	410	Textile mills
2221	BROAD WOVEN FABRIC MILLS, SYNT	PSC	410	Textile mills
2231	BROAD WOVEN FABRIC MILLS, WOOL	PSC	410	Textile mills
2241	NARROW FAB & OTHER SMALLWARES	PSC	410	Textile mills
2251	WOMEN'S FULL/KNEE LENGTH HOSRY	PSC	410	Textile mills
2252	HOSIERY, NEC	PSC	410	Textile mills
2253	KNIT OUTERWEAR MILLS	PSC	410	Textile mills
2254	KNIT UNDERWEAR MILLS	PSC	410	Textile mills
2257	CIRCULAR KNIT FABRIC MILLS	PSC	410	Textile mills
2258	WARP KNIT FABRIC MILLS	PSC	410	Textile mills
2259	KNITTING MILLS, NEC	PSC	410	Textile mills
2261	FINISH OF BRD WOV FAB OF COTTN	PSC	410	Textile mills
2262	FINISH OF BRD WOV FAB/MAN-MADE	PSC	410	Textile mills
2269	FINISHERS OF TEXTILES, NEC	PSC	410	Textile mills
2273	CARPETS AND RUGS, NEC	PSC	410	Textile mills
2281	YARN SPIN MILLS:COTTON, MM FIB	PSC	410	Textile mills
2282	YARN TEXT, THROW, TWIST & WIND	PSC	410	Textile mills
2284	THREAD MILLS	PSC	410	Textile mills
2295	COATED FABRICS, NOT RUBBERIZED	PSC	410	Textile mills
2296	TIRE CORD AND FABRIC	PSC	410	Textile mills
2297	NONWOVEN FABRICS	PSC	410	Textile mills
2298	CORDAGE AND TWINE	PSC	410	Textile mills
2299	TEXTILE GOODS, NEC	PSC	410	Textile mills
2311	MEN'S & BOY'S SUITS, COATS	SIC	23	Apparel & Other Textile Products
2321	MEN'S, & BOY'S SHIRTS	SIC	23	Apparel & Other Textile Products
2322	MEN'S & BOYS UNDERWEAR & NIGHT	PSC	410	Textile mills
2323	MEN'S, YOUTH'S & BOYS NECKWEAR	SIC	23	Apparel & Other Textile Products
2325	MEN & BOY SEP TROUSERS & SLACK	SIC	23	Apparel & Other Textile Products
2326	MEN'S & BOY'S WORK CLOTHING	SIC	23	Apparel & Other Textile Products
2329	MEN'S, YOUTH'S & BOY'S CLOTHNG	SIC	23	Apparel & Other Textile Products
2331	WOMEN, MIS, JR' BLSES, WAISTS	SIC	23	Apparel & Other Textile Products
2335	WOMEN'S, MISSES' & JRS' DRESS	SIC	23	Apparel & Other Textile Products
2337	WOMEN, MIS', JRS' SUITS, SHIRT	SIC	23	Apparel & Other Textile Products
2339	WOMEN'S, MISS' & JR' OUTERWEAR	SIC	23	Apparel & Other Textile Products

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
2341	WOMENS,MIS',CHLD'S,INF UNDERWE	SIC	23	Apparel & Other Textile Products
2342	BRASSIERS,GIRDLES & ALLIED GAR	SIC	23	Apparel & Other Textile Products
2353	HATS, CAPS AND MILLINERY	SIC	23	Apparel & Other Textile Products
2361	GIRLS, CHILDS & INFS OUTERWEAR	SIC	23	Apparel & Other Textile Products
2369	GIRLS, CHILDS & INFS OUTERWEAR	SIC	23	Apparel & Other Textile Products
2371	FUR GOODS	SIC	23	Apparel & Other Textile Products
2381	DRESS & WK GLOVE EXC KNIT/LEAT	SIC	23	Apparel & Other Textile Products
2384	ROBES & DRESSING GOWNS	SIC	23	Apparel & Other Textile Products
2385	RAINCOATS & RAINGEAR	SIC	23	Apparel & Other Textile Products
2386	LEATHER & SHEEP-LINED CLOTHING	SIC	23	Apparel & Other Textile Products
2387	APPAREL BELTS	SIC	23	Apparel & Other Textile Products
2389	APPAREL & ACCESSORIES, NEC	SIC	23	Apparel & Other Textile Products
2391	CURTAINS & DRAPERIES	SIC	23	Apparel & Other Textile Products
2392	HOUSEFURNISHINGS, EXC CURTAINS	SIC	23	Apparel & Other Textile Products
2393	TEXTILE BAGS	SIC	23	Apparel & Other Textile Products
2394	CANVAS & RELATED PRODUCTS	SIC	23	Apparel & Other Textile Products
2395	PLEATING, DECOR/NOVELTY STITCH	SIC	23	Apparel & Other Textile Products
2396	AUTOMOTIVE TRIMMINGS, APPAREL	PSC	410	Textile mills
2397	SCHIFFLI MACHINE EMBROIDERIES	SIC	23	Apparel & Other Textile Products
2399	FABRCATED TEXTILE PRODUCTS NEC	PSC	410	Textile mills
2411	LOGGING CAMPS/LOGGING CONTRACT	SIC	24	Lumber & Wood Products
2421	SAWMILLS & PLANING MILLS, GEN	PSC	429	Timber products processing
2426	HARDWOOD DIMEN & FLOORING MILL	SIC	24	Lumber & Wood Products
2429	SPECIAL PRODUCT SAWMILLS NEC	SIC	24	Lumber & Wood Products
2431	MILLWORK	PSC	429	Timber products processing
2434	WOOD KITCHEN CABINETS	PSC	429	Timber products processing
2435	HARDWOOD VENEER AND PLYWOOD	PSC	429	Timber products processing
2436	SOFTWOOD VENEER AND PLYWOOD	PSC	429	Timber products processing
2439	STRUCTURAL WOOD MEMBERS, NEC	PSC	429	Timber products processing
2441	NAILED/LOCK CORNER WOOD BOXES	SIC	24	Lumber & Wood Products
2448	WOOD PALLETS AND SKIDS	SIC	24	Lumber & Wood Products
2449	WOOD CONTAINERS NEC	SIC	24	Lumber & Wood Products
2451	MOBILE HOMES	SIC	24	Lumber & Wood Products
2452	PREFAB WOOD BLDGS & COMPONENTS	SIC	24	Lumber & Wood Products

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
2491	WOOD PRESERVING	PSC	429	Timber products processing
2493	RECONSTITUTED WOOD PRODUCTS	PSC	429	Timber products processing
2499	WOOD PRODUCTS, NEC	PSC	429	Timber products processing
2511	WOOD HOUSEHOLD FURN, EXC UPHOL	PSC	429	Timber products processing
2512	WOOD HOUSEHOLD FURN, UPHOLSTER	PSC	429	Timber products processing
2514	METAL HOUSEHOLD FURNITURE	PSC	433	Metal Finishing
2515	MATTRESSES AND BEDSPRINGS	SIC	25	Furniture & Fixtures
2517	WOOD TV, RADIO, PHONO CABINET	PSC	429	Timber products processing
2519	HOUSEHOLD FURNITURE, NEC	SIC	25	Furniture & Fixtures
2521	WOOD OFFICE FURNITURE	PSC	429	Timber products processing
2522	METAL OFFICE FURNITURE	PSC	433	Metal Finishing
2531	PUBLIC BUILDING/RELATED FURNIT	PSC	433	Metal Finishing
2541	WOOD PARTI,SHELF,LOCK,ETC	PSC	429	Timber products processing
2542	METAL PARTI,SHELF,LOCKERS	PSC	433	Metal Finishing
2591	DRAPE HARDWARE/WINDOW BLINDS	PSC	433	Metal Finishing
2599	FURNITURE AND FIXTURES, NEC	PSC	433	Metal Finishing
2611	PULP MILLS	PSC	430	Pulp, paper and paperboard
2621	PAPER MILLS	PSC	430	Pulp, paper and paperboard
2631	PAPERBOARD MILLS	PSC	430	Pulp, paper and paperboard
2652	SET-UP PAPERBOARD BOXES	SIC	26	Paper & Allied Products
2653	CORRUGATED/SOLID FIBER BOXES	PSC	430	Pulp, paper and paperboard
2655	FIBER CANS, TUBES,DRUMS & PROD	PSC	430	Pulp, paper and paperboard
2656	SANITARY FOOD CONTAINERS	PSC	430	Pulp, paper and paperboard
2657	FOLDING PAPERBOARD BOXES	PSC	430	Pulp, paper and paperboard
2671	COATED & LAMINATED PACKAGING	PSC	430	Pulp, paper and paperboard
2672	COATED & LAMINATED, NEC	PSC	430	Pulp, paper and paperboard
2673	BAGS, PLASTIC, LAMINA & COATED	SIC	26	Paper & Allied Products
2674	BAGS,UNCOATD PAPER & MULTIWALL	PSC	430	Pulp, paper and paperboard
2675	DIE-CUT PAPER,PAPERBRD/CARDBRD	SIC	26	Paper & Allied Products
2676	SANITARY PAPER PRODUCTS	SIC	26	Paper & Allied Products
2677	ENVELOPES	SIC	26	Paper & Allied Products
2678	STATIONERY, TABLETS & REL PROD	SIC	26	Paper & Allied Products
2679	CONV PAPER & PAPERBRD PRODUCTS	PSC	430	Pulp, paper and paperboard
2711	NEWSPAPERS: PUBLISHING & PRINT	PNC	NA	Printing & Publishing

Table C-1. SIC/Point Source Category Crosswalk

SIC Code	SIC Description	Type of Grouping	40 CFR Part or SIC Group	Point Source Category
2721	PERIODICALS: PUBLISHING & PRIN	PNC	NA	Printing & Publishing
2731	BOOKS: PUBLISHING & PRINTING	PNC	NA	Printing & Publishing
2732	BOOK PRINTING	PNC	NA	Printing & Publishing
2741	MISCELLANEOUS PUBLISHING	PNC	NA	Printing & Publishing
2752	COMMERCIAL PRINT, LITHOGRAPHIC	PNC	NA	Printing & Publishing
2754	COMMERCIAL PRINTING, GRAVURE	PNC	NA	Printing & Publishing
2759	COMMERCIAL PRINTING, NEC	PNC	NA	Printing & Publishing
2761	MANIFOLD BUSINESS FORMS	PNC	NA	Printing & Publishing
2771	GREETING CARD PUBLISHING	PNC	NA	Printing & Publishing
2782	BLANKBOOKS, LOOSELEAF BINDERS	PNC	NA	Printing & Publishing
2789	BOOKBINDING & RELATED WORK	PNC	NA	Printing & Publishing
2791	TYPESETTING	PNC	NA	Printing & Publishing
2796	PLATEMAKING SERVICES	PSC	433	Metal Finishing
2812	ALKALIES AND CHLORINE	PSC	415	Inorganic chemicals
2813	INDUSTRIAL GASES	PSC	415	Inorganic chemicals
2816	INORGANIC PIGMENTS	PSC	415	Inorganic chemicals
2819	INDUSTRIAL INORGANIC CHEMICALS	PSC	415	Inorganic chemicals
2821	PLSTC MAT./SYN RESINS/NV ELAST	PSC	414	Organic chemicals, plastics and synthetic fibers
2822	SYN RUBBER (VULCAN ELASTOMERS)	PSC	428	Rubber Manufacturing
2823	CELLULOSIC MAN-MADE FIBERS	PSC	414	Organic chemicals, plastics and synthetic fibers
2824	SYN ORG FIBERS, EXCEPT CELLULOS	PSC	414	Organic chemicals, plastics and synthetic fibers
2833	MEDICINAL CHEM/BOTANICAL PRODU	PSC	439	Pharmaceutical manufacturing
2834	PHARMACEUTICAL PREPARATIONS	PSC	439	Pharmaceutical manufacturing
2835	DIAGNOSTIC SUBSTANCES	PSC	439	Pharmaceutical manufacturing
2836	BIOLOGCAL PROD, EXCEPT DIAGNOS	PSC	439	Pharmaceutical manufacturing
2841	SOAP/DETERG EXC SPECIAL CLEANR	PSC	417	Soaps and detergents manufacturing
2842	SPECIALTY CLEANING, POLISHING	PSC	414	Organic chemicals, plastics and synthetic fibers
2843	SURF ACTIVE AGENT, FIN AGENTS	PSC	417	Soaps and detergents manufacturing
2844	PERFUMES, COSMETICS, TOILET PREP	PSC	414	Organic chemicals, plastics and synthetic fibers
2851	PAINTS/VARNISH/LACQUERS/ENAMEL	PSC	446	Paint formulating
2861	GUM AND WOOD CHEMICALS	PSC	454	Gum and wood chemicals
2865	CYCLIC CRUDES INTERM., DYES	PSC	414	Organic chemicals, plastics and synthetic fibers
2869	INDUST. ORGANIC CHEMICALS NEC	PSC	414	Organic chemicals, plastics and synthetic fibers
2873	NITROGEN FERTILIZERS	PSC	418	Fertilizer manufacturing



Table C-1. SIC/Point Source Category Crosswalk

SIC Code	SIC Description	Type of Grouping	40 CFR Part or SIC Group	Point Source Category
2874	PHOSPHATIC FERTILIZERS	PSC	422	Phosphate manufacturing
2875	FERTILIZERS, MIXING ONLY	PSC	418	Fertilizer manufacturing
2879	PESTICIDES & AGRICULTURAL CHEM	PSC	455	Pesticide chemicals manufacturing
2891	ADHESIVES AND SEALANTS	PSC	414	Organic chemicals, plastics and synthetic fibers
2892	EXPLOSIVES	PSC	457	Explosives
2893	PRINTING INK	PSC	447	Ink formulating
2895	CARBON BLACK	PSC	458	Carbon black manufacturing
2899	CHEMICALS & CHEM PREP, NEC	PSC	414	Organic chemicals, plastics and synthetic fibers
2911	PETROLEUM REFINING	PSC	419	Petroleum refining
2951	PAVING MIXTURES AND BLOCKS	PSC	443	Paving and roofing materials (tars and asphalt)
2952	ASPHALT FELT AND COATINGS	PSC	443	Paving and roofing materials (tars and asphalt)
2992	LUBRICATING OILS AND GREASES	PSC	419	Petroleum refining
2999	PROD OF PETROLEUM & COAL, NEC	PSC	419	Petroleum refining
3011	TIRES AND INNER TUBES	PSC	428	Rubber Manufacturing
3021	RUBBER AND PLASTICS FOOTWEAR	PSC	428	Rubber Manufacturing
3052	RUBBER & PLASTICS HOSE & BELT	PSC	428	Rubber Manufacturing
3053	GASKETS, PACKING & SEALING DEV	PSC	428	Rubber Manufacturing
3061	MECHANICAL RUBBER GOODS	PSC	428	Rubber Manufacturing
3069	FABRICATED RUBBER PRODUCTS,NEC	PSC	428	Rubber Manufacturing
3081	UNSUPPORTED PLSTICS FILM/SHEET	PSC	463	Plastic molding and forming
3082	UNSUPPORTED PLASTICS PROF SHAP	PSC	463	Plastic molding and forming
3083	LAMINATED PLASTICS PLATE/SHEET	PSC	463	Plastic molding and forming
3084	PLASTIC PIPE	PSC	463	Plastic molding and forming
3085	PLASTIC BOTTLES	PSC	463	Plastic molding and forming
3086	PLASTICS FOAM PRODUCTS	PSC	463	Plastic molding and forming
3087	CUSTOM COMPOUNDED PURCH. RESIN	PSC	463	Plastic molding and forming
3088	PLASTICS PLUMBING FIXTURES	PSC	463	Plastic molding and forming
3089	PLASTICS PRODUCTS, NEC	PSC	463	Plastic molding and forming
3111	LEATHER TANNING AND FINISHING	PSC	425	Leather tanning and finishing
3131	BOOT & SHOE CUT STOCK & FINDNG	SIC	31	Leather & Leather Products
3142	HOUSE SLIPPERS	SIC	31	Leather & Leather Products
3143	MEN'S FOOTWEAR,EXCEPT ATHLETIC	SIC	31	Leather & Leather Products
3144	WOMEN'S FOOTWEAR,EXCEPT ATHLET	SIC	31	Leather & Leather Products
3149	FOOTWEAR, EXCEPT RUBBER NEC	SIC	31	Leather & Leather Products

Table C-1. SIC/Point Source Category Crosswalk

SIC Code	SIC Description	Type of Grouping	40 CFR Part or SIC Group	Point Source Category
3151	LEATHER GLOVES AND MITTENS	SIC	31	Leather & Leather Products
3161	LUGGAGE	SIC	31	Leather & Leather Products
3171	WOMEN'S HANDBAGS AND PURSES	SIC	31	Leather & Leather Products
3172	PERSONAL LEATHER GOODS,EXC HAN	SIC	31	Leather & Leather Products
3199	LEATHER GOODS NEC	SIC	31	Leather & Leather Products
3211	FLAT GLASS	PSC	426	Glass manufacturing
3221	GLASS CONTAINERS	PSC	426	Glass manufacturing
3229	PRESSED & BLOWN GLASS & GWARE	PSC	426	Glass manufacturing
3231	GLASS PROD MADE OF PURCH. GLAS	PSC	426	Glass manufacturing
3241	CEMENT, HYDRAULIC	PSC	411	Cement manufacturing
3251	BRICK AND STRUCTURAL CLAY TILE	PSC	436	Mineral Mining and Processing
3253	CERAMIC WALL AND FLOOR TILE	PSC	436	Mineral Mining and Processing
3255	CLAY REFRACTORIES	PSC	436	Mineral Mining and Processing
3259	STRUCTURAL CLAY PRODUCTS NEC	PSC	436	Mineral Mining and Processing
3261	VITREOUS CHINA PLUMBING FIXTUR	PSC	436	Mineral Mining and Processing
3262	VIT CHINA TABLE & KTCHN ARTICL	PSC	436	Mineral Mining and Processing
3263	FINE EARTHENWARE	PSC	436	Mineral Mining and Processing
3264	PORCELAIN ELECTRICAL SUPPLIES	PSC	436	Mineral Mining and Processing
3269	POTTERY PRODUCTS, NEC	PSC	436	Mineral Mining and Processing
3271	CONCRETE BLOCK & BRICK	SIC	32	Stone, Clay, & Glass Products
3272	CONCRETE PROD EXC BLCK & BRICK	PSC	411	Cement manufacturing
3273	READY-MIXED CONCRETE	PSC	411	Cement manufacturing
3274	LIME	PSC	436	Mineral Mining and Processing
3275	GYPSUM PRODUCTS	PSC	436	Mineral Mining and Processing
3281	CUT STONE & STONE PRODUCTS	SIC	32	Stone, Clay, & Glass Products
3291	ABRASIVE PRODUCTS	PSC	436	Mineral Mining and Processing
3292	ASBESTOS PRODUCTS	PSC	427	Asbestos manufacturing
3295	MINE & EARTHS, GROUND OR TREAT	PSC	436	Mineral Mining and Processing
3296	MINERAL WOOL	PSC	426	Glass manufacturing
3297	NONCLAY REFRACTORIES	PSC	436	Mineral Mining and Processing
3299	NONMETALLIC MINERAL PROD, NEC	PSC	436	Mineral Mining and Processing
3312	BLAST FURN/STEEL WORKS/ROLLING	PSC	420	Iron and steel manufacturing
3313	ELECTROMETALLURGICAL PRODUCTS	PSC	424	Ferroalloy manufacturing
3315	STEEL WIRE DRAW & STEEL NAILS	PSC	420	Iron and steel manufacturing

Table C-1. SIC/Point Source Category Crosswalk

SIC Code	SIC Description	Type of Grouping	40 CFR Part or SIC Group	Point Source Category
3316	COLD ROLLED STEEL SHEET/STRIP	PSC	420	Iron and steel manufacturing
3317	STEEL PIPE AND TUBES	PSC	420	Iron and steel manufacturing
3321	GRAY IRON FOUNDRIES	PSC	464	Metal molding and casting (foundries)
3322	MALLEABLE IRON FOUNDRIES	PSC	464	Metal molding and casting (foundries)
3324	STEEL INVESTMENT FOUNDRIES	PSC	464	Metal molding and casting (foundries)
3325	STEEL FOUNDRIES, NEC	PSC	464	Metal molding and casting (foundries)
3331	PRIMARY SMELTING & COPPER REFIN	PSC	421	Nonferrous metals manufacturing
3334	PRIMARY PRODUCTION OF ALUMINUM	PSC	421	Nonferrous metals manufacturing
3339	PRIMARY SMELT/NONFERROUS METALS	PSC	421	Nonferrous metals manufacturing
3341	SECONDARY SMELT/NONFERROUS METALS	PSC	421	Nonferrous metals manufacturing
3351	ROLL/DRAW/EXTRUDING OF COPPER	PSC	468	Copper forming
3353	ALUMINUM SHEET, PLATE AND FOIL	PSC	467	Aluminum forming
3354	ALUMINUM EXTRUDED PRODUCTS	PSC	467	Aluminum forming
3355	ALUMINUM ROLLING & DRAWING NEC	PSC	467	Aluminum forming
3356	ROLL, DRAW & EXTRUDE NONFERROUS	PSC	471	Nonferrous metals forming and metal powders
3357	DRAW/INSULATE OF NONFERROUS WIRE	PSC	467	Aluminum forming
3357	DRAW/INSULATE OF NONFERROUS WIRE	PSC	468	Copper forming
3357	DRAW/INSULATE OF NONFERROUS WIRE	PSC	471	Nonferrous metals forming and metal powders
3363	ALUMINUM DIE CASTING	PSC	467	Aluminum forming
3363	ALUMINUM DIE CASTING	PSC	471	Nonferrous metals forming and metal powders
3364	NONFERROUS DIE CAST, EXC. ALUM	PSC	464	Metal molding and casting (foundries)
3365	ALUMINUM FOUNDRIES	PSC	464	Metal molding and casting (foundries)
3366	COPPER FOUNDRIES	PSC	464	Metal molding and casting (foundries)
3369	NONFERROUS FOUNDRIES, EXC ALUM	PSC	464	Metal molding and casting (foundries)
3398	METAL HEAT TREATING	PSC	433	Metal Finishing
3399	PRIMARY METAL PRODUCTS, NEC	PSC	471	Nonferrous metals forming and metal powders
3411	METAL CANS	PSC	465	Coil coating
3412	METAL BARRELS, DRUMS AND PAILS	PSC	433	Metal Finishing
3421	CUTLERY	PSC	433	Metal Finishing
3423	HAND AND EDGE TOOLS, NEC	PSC	433	Metal Finishing
3425	HAND SAWS AND SAW BLADES	PSC	433	Metal Finishing
3429	HARDWARE, NEC	PSC	433	Metal Finishing
3431	METAL SANITARY WARE	PSC	433	Metal Finishing
3431	METAL SANITARY WARE	PSC	466	Porcelain Enameling

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
3432	PLUMB FIXTURE FITTINGS & TRIM	PSC	433	Metal Finishing
3433	HEATING EQUIP, EXCEPT ELECTRIC	PSC	433	Metal Finishing
3441	FABRICATED STRUCTURAL METAL	PSC	433	Metal Finishing
3442	METAL DOORS, SASH, AND TRIM	PSC	433	Metal Finishing
3443	FAB PLATE WORK (BOILER SHOPS)	PSC	433	Metal Finishing
3444	SHEET METAL WORK	PSC	433	Metal Finishing
3446	ARCHITECTURAL METAL WORK	PSC	433	Metal Finishing
3448	PREFABRICATED METAL BUILDINGS	PSC	433	Metal Finishing
3449	MISC. STRUCTUAL METAL WORK	PSC	433	Metal Finishing
3451	SCREW MACHINE PRODUCTS	PSC	433	Metal Finishing
3452	BOLTS, NUTS, RIVETS & WASHERS	PSC	433	Metal Finishing
3462	IRON AND STEEL FORGINGS	PSC	433	Metal Finishing
3463	NONFERROUS FORGINGS	PSC	467	Aluminum forming
3463	NONFERROUS FORGINGS	PSC	468	Copper forming
3463	NONFERROUS FORGINGS	PSC	471	Nonferrous metals forming and metal powders
3465	AUTOMOTIVE STAMPINGS	PSC	433	Metal Finishing
3466	CROWNS AND CLOSURES	PSC	433	Metal Finishing
3469	METAL STAMPINGS, NEC	PSC	433	Metal Finishing
3469	METAL STAMPINGS, NEC	PSC	466	Porcelain Enameling
3471	PLATING AND POLISHING	PSC	413	Electroplating
3479	METAL COATING & ALLIED SERVIC	PSC	433	Metal Finishing
3479	METAL COATING & ALLIED SERVIC	PSC	466	Porcelain Enameling
3482	SMALL ARMS AMMUNITION	PSC	433	Metal Finishing
3482	SMALL ARMS AMMUNITION	PSC	471	Nonferrous metals forming and metal powders
3483	AMMUNIT., EXC. FOR SMALL ARMS	PSC	433	Metal Finishing
3483	AMMUNIT., EXC. FOR SMALL ARMS	PSC	471	Nonferrous metals forming and metal powders
3484	SMALL ARMS	PSC	433	Metal Finishing
3489	ORDNANCE AND ACCESSORIES, NEC	PSC	433	Metal Finishing
3491	INDUSTRIAL VALVES	PSC	433	Metal Finishing
3492	FLUID POWER VALVES & HOSE FITT	PSC	433	Metal Finishing
3493	STEEL SPRINGS, EXCEPT WIRE	PSC	433	Metal Finishing
3494	VALVES AND PIPE FITTINGS, NEC	PSC	433	Metal Finishing
3495	WIRE SPRINGS	PSC	433	Metal Finishing
3496	MISC. FABRICATED WIRE PRODUCTS	PSC	433	Metal Finishing

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
3497	METAL FOIL AND LEAF	PSC	433	Metal Finishing
3498	FABRICATED PIPE AND FITTINGS	PSC	433	Metal Finishing
3499	FABRICATED METAL PRODUCTS NEC	PSC	433	Metal Finishing
3511	TURBINES & TURBINE GENERATOR	PSC	433	Metal Finishing
3519	INTERNAL COMBUSTION ENGINES,	PSC	433	Metal Finishing
3523	FARM MACHINERY AND EQUIPMENT	PSC	433	Metal Finishing
3524	LAWN AND GARDEN EQUIPMENT	PSC	433	Metal Finishing
3531	CONSTRUCTION MACHINERY	PSC	433	Metal Finishing
3532	MINING MACHINERY	PSC	433	Metal Finishing
3533	OIL FIELD MACHINERY	PSC	433	Metal Finishing
3534	ELEVATORS AND MOVING STAIRWAYS	PSC	433	Metal Finishing
3535	CONVEYORS & CONVEYING EQUIPMEN	PSC	433	Metal Finishing
3536	CRANES/HOISTS/MONORAIL SYSTEMS	PSC	433	Metal Finishing
3537	INDUSTRIAL TRUCKS AND TRACTORS	PSC	433	Metal Finishing
3541	MACHINE TOOLS, METAL CUTTING	PSC	433	Metal Finishing
3542	MACHINE TOOLS, METAL FORMING	PSC	433	Metal Finishing
3543	INDUSTRIAL PATTERNS	PSC	433	Metal Finishing
3544	SPECIAL DIES/TOOLS/JIGS & FIXT	PSC	433	Metal Finishing
3545	MACHINE TOOL ACCESSORIES	PSC	433	Metal Finishing
3546	POWER DRIVEN HAND TOOLS	PSC	433	Metal Finishing
3547	ROLLING MILL MACHINERY	PSC	433	Metal Finishing
3548	WELDING APPARATUS	PSC	433	Metal Finishing
3549	METALWORKING MACHINERY, NEC	PSC	433	Metal Finishing
3552	TEXTILE MACHINERY	PSC	433	Metal Finishing
3553	WOODWORKING MACHINERY	PSC	433	Metal Finishing
3554	PAPER INDUSTRIES MACHINERY	PSC	433	Metal Finishing
3555	PRINTING TRADES MACHINERY	PSC	433	Metal Finishing
3556	FOOD PRODUCTS MACHINERY	PSC	433	Metal Finishing
3559	SPECIAL INDUSTRY MACHINERY,NEC	PSC	433	Metal Finishing
3561	PUMPS AND PUMPING EQUIPMENT	PSC	433	Metal Finishing
3562	BALL AND ROLLER BEARINGS	PSC	433	Metal Finishing
3563	AIR AND GAS COMPRESSORS	PSC	433	Metal Finishing
3564	BLOWER AND FANS	PSC	433	Metal Finishing
3565	PACKAGING MACHINERY	PSC	433	Metal Finishing

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
3566	SPEED CHANGERS, DRIVES & GEARS	PSC	433	Metal Finishing
3567	INDUSTRIAL FURNACES AND OVENS	PSC	433	Metal Finishing
3568	POWER TRANSMISSION EQUIPMENT	PSC	433	Metal Finishing
3569	GENERAL INDUSTRIAL MACHINERY	PSC	433	Metal Finishing
3571	ELECTRONIC COMPUTERS	PSC	433	Metal Finishing
3572	COMPUTER STORAGE DEVICES	PSC	433	Metal Finishing
3575	COMPUTER TERMINALS	PSC	433	Metal Finishing
3577	COMPUTER PERIPHERAL EQUIP, NEC	PSC	433	Metal Finishing
3578	CALC & ACCOUNTING EQUIPMENT	PSC	433	Metal Finishing
3579	OFFICE MACHINES	PSC	433	Metal Finishing
3581	AUTOMATIC MERCHANDISING MACHIN	PSC	433	Metal Finishing
3582	COMMERCIAL LAUNDRY EQUIPMENT	PSC	433	Metal Finishing
3585	REFRIGERATION & HEATING EQUIP	PSC	433	Metal Finishing
3586	MEASURING & DISPENSING PUMPS	PSC	433	Metal Finishing
3589	SERVICE INDUSTRY MACHINERY	PSC	433	Metal Finishing
3592	CARBURETORS, PISTONS, RINGS, VALV	PSC	433	Metal Finishing
3593	FLUID POWER CYLINDERS & ACTUAT	PSC	433	Metal Finishing
3594	FLUID POWER PUMPS AND MOTORS	PSC	433	Metal Finishing
3596	SCALES AND BALANCES, EXC. LAB	PSC	433	Metal Finishing
3599	INDUSTRIAL MACHINERY, NEC	PSC	433	Metal Finishing
3612	TRANSFORMERS	PSC	433	Metal Finishing
3613	SWITCHGEAR & SWITCHBOARD APPAR	PSC	433	Metal Finishing
3621	MOTORS AND GENERATORS	PSC	433	Metal Finishing
3624	CARBON AND GRAPHITE PRODUCTS	PSC	433	Metal Finishing
3625	RELAYS AND INDUSTRIAL CONTROLS	PSC	433	Metal Finishing
3629	ELECTRICAL INDUSTRIAL APPARATS	PSC	433	Metal Finishing
3631	HOUSEHOLD COOKING EQUIPMENT	PSC	433	Metal Finishing
3631	HOUSEHOLD COOKING EQUIPMENT	PSC	466	Porcelain Enameling
3632	HOUSEHOLD REFRIG. & FREEZERS	PSC	433	Metal Finishing
3632	HOUSEHOLD REFRIG. & FREEZERS	PSC	466	Porcelain Enameling
3633	HOUSEHOLD LAUNDRY EQUIPMENT	PSC	433	Metal Finishing
3633	HOUSEHOLD LAUNDRY EQUIPMENT	PSC	466	Porcelain Enameling
3634	ELECTRIC HOUSEWARES AND FANS	PSC	433	Metal Finishing
3635	HOUSEHOLD VACUUM CLEANERS	PSC	433	Metal Finishing

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<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
3639	HOUSEHOLD APPLIANCES, NEC	PSC	433	Metal Finishing
3639	HOUSEHOLD APPLIANCES, NEC	PSC	466	Porcelain Enameling
3641	ELECTRIC LAMPS	PSC	433	Metal Finishing
3643	CURRENT-CARRYING WIRING DEVICE	PSC	433	Metal Finishing
3644	NONCURRENT-CARRYING WIRING DEV	PSC	433	Metal Finishing
3645	RESIDENTIAL LIGHTING FIXTURES	PSC	433	Metal Finishing
3646	COMMERCIAL LIGHTING FIXTURES	PSC	433	Metal Finishing
3647	VEHICULAR LIGHTING EQUIPMENT	PSC	433	Metal Finishing
3648	LIGHTING EQUIPMENT, NEC	PSC	433	Metal Finishing
3651	RADIO AND TV RECEIVING SETS	PSC	433	Metal Finishing
3652	PHONOGRAPH RECORDS	PSC	433	Metal Finishing
3661	TELEPHONE/TELEGRAPH APPARATUS	PSC	433	Metal Finishing
3663	RADIO & TV COMMUNICATION EQUIP	PSC	433	Metal Finishing
3669	COMMUNICATIONS EQUIPMENT, NEC.	PSC	433	Metal Finishing
3671	ELECTRON TUBES	PSC	469	Electrical and electronic components
3672	PRINTED CIRCUIT BOARD	PSC	433	Metal Finishing
3674	SEMICONDUCTORS & RELATED DEVIC	PSC	469	Electrical and electronic components
3675	ELECTRONIC CAPACITORS	PSC	433	Metal Finishing
3676	RESISTORS FOR ELEC APPLICATION	PSC	433	Metal Finishing
3677	ELEC COILS, TRANSF. & INDUCTOR	PSC	433	Metal Finishing
3678	CONNECTORS FOR ELEC APPLICATIO	PSC	433	Metal Finishing
3679	ELECTRONIC COMPONENTS, NEC	PSC	433	Metal Finishing
3691	STORAGE BATTERIES	PSC	461	Battery manufacturing
3692	PRIMARY BATTERIES, DRY & WET	PSC	461	Battery manufacturing
3694	ELEC EQUIP FOR INT COMBUS ENGI	PSC	433	Metal Finishing
3695	MAG & OPTICAL RECORDING MEDIA	PSC	433	Metal Finishing
3699	ELEC MACHINERY,EQUIP & SUPPLIE	PSC	433	Metal Finishing
3711	MOTOR VEHICLES & CAR BODIES	PSC	433	Metal Finishing
3713	TRUCK & BUS BODIES	PSC	433	Metal Finishing
3714	MOTOR VEHICLE PARTS & ACCESSOR	PSC	433	Metal Finishing
3715	TRUCK TRAILERS	PSC	433	Metal Finishing
3716	MOTOR HOMES	PSC	433	Metal Finishing
3721	AIRCRAFT	PSC	433	Metal Finishing
3724	AIRCRAFT ENGINES & ENGINE PART	PSC	433	Metal Finishing

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
3728	AIRCRAFT PARTS AND EQUIP, NEC	PSC	433	Metal Finishing
3731	SHIP BUILDING AND REPAIRING	PSC	433	Metal Finishing
3732	BOAT BUILDING AND REPAIRING	PSC	433	Metal Finishing
3743	RAILROAD EQUIPMENT	PSC	433	Metal Finishing
3751	MOTORCYCLES, BICYCLES AND PART	PSC	433	Metal Finishing
3761	GUIDED MISSILES & SPACE VEHICL	PSC	433	Metal Finishing
3764	SPACE PROPULSION UNITS & PARTS	PSC	433	Metal Finishing
3769	SPACE VEHICLE EQUIPMENT, NEC	PSC	433	Metal Finishing
3792	TRAVEL TRAILERS AND CAMPERS	PSC	433	Metal Finishing
3795	TANKS AND TANK COMPONENTS	PSC	433	Metal Finishing
3799	TRANSPORTATION EQUIPMENT, NEC	PSC	433	Metal Finishing
3812	SEARCH & NAVIGATION EQUIPMENT	PSC	433	Metal Finishing
3821	LAB APPARATUS & FURNITURE	PSC	433	Metal Finishing
3822	ENVIRONMENTAL CONTROLS	PSC	433	Metal Finishing
3823	PROCESS CONTROL INSTRUMENTS	PSC	433	Metal Finishing
3824	FLUID METERS & COUNTING DEVICE	PSC	433	Metal Finishing
3825	INSTRUMENTS TO MEASURE ELECTRI	PSC	433	Metal Finishing
3826	ANALYTICAL INSTRUMENTS	PSC	433	Metal Finishing
3827	OPTICAL INSTRUMENTS AND LENSES	PSC	433	Metal Finishing
3829	MEASURING & CONTROLLING DEVICE	PSC	433	Metal Finishing
3841	SURGICAL & MEDICAL INSTRUMENTS	PSC	433	Metal Finishing
3842	SURGICAL APPLIANCES & SUPPLIES	PSC	433	Metal Finishing
3843	DENTAL EQUIPMENT AND SUPPLIES	PSC	433	Metal Finishing
3844	X-RAY APPARATUS AND TUBES	PSC	433	Metal Finishing
3845	ELECTROMEDICAL EQUIPMENT	PSC	433	Metal Finishing
3851	OPHTHALMIC GOODS	PSC	433	Metal Finishing
3861	PHOTOGRAPHIC EQUIP & SUPPLIES	PSC	433	Metal Finishing
3873	WATCHES, CLOCKS & WATCHCASES	PSC	433	Metal Finishing
3911	JEWELRY, PRECIOUS METAL	PSC	433	Metal Finishing
3914	SILVERWARE AND PLATED WARE	PSC	433	Metal Finishing
3915	JEWELERS' MATERIALS & LAPIDARY	PSC	433	Metal Finishing
3931	MUSICAL INSTRUMENTS	PSC	433	Metal Finishing
3942	DOLLS	SIC	39	Misc. Manuf. Industries
3944	GAMES, TOYS & CHILDREN'S VEHIC	PSC	433	Metal Finishing



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<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
3949	SPORTING & ATHLETIC GOODS, NEC	PSC	433	Metal Finishing
3951	PENS & MECHANICAL PENCILS	PSC	433	Metal Finishing
3952	LEAD PENCILS AND ART GOODS	SIC	39	Misc. Manuf. Industries
3953	MARKING DEVICES	PSC	433	Metal Finishing
3955	CARBON PAPER AND INKED RIBBONS	SIC	39	Misc. Manuf. Industries
3961	COSTUME JEWELRY	PSC	433	Metal Finishing
3965	FASTENERS, BUTTONS, NEEDLES	PSC	433	Metal Finishing
3991	BROOMS AND BRUSHES	SIC	39	Misc. Manuf. Industries
3993	SIGNS AND ADVERTISING DISPLAYS	PSC	433	Metal Finishing
3995	BURIAL CASKETS	PSC	433	Metal Finishing
3996	HARD SURFACE FLOOR COVERINGS	PSC	443	Paving and roofing materials (tars and asphalt)
3999	MANUFACTURING INDUSTRIES, NEC	PSC	433	Metal Finishing
4011	RAILROADS, LINE HAUL OPERATING	PSC	433	Metal Finishing
4013	RAILROAD SWITCHING & TERM ESTAB	PSC	433	Metal Finishing
4111	LOCAL AND SUBURBAN TRANSIT	SIC	41	Local & Interurban Passenger Transit
4119	LOCAL PASSENGER TRANSPORTATION	SIC	41	Local & Interurban Passenger Transit
4121	TAXICABS	SIC	41	Local & Interurban Passenger Transit
4131	INTERCITY & RURAL BUS TRANSPOR	SIC	41	Local & Interurban Passenger Transit
4141	LOCAL BUS CHARTER SERVICE	SIC	41	Local & Interurban Passenger Transit
4142	BUS CHARTER SERVICE, EXC LOCAL	SIC	41	Local & Interurban Passenger Transit
4151	SCHOOL BUSES	SIC	41	Local & Interurban Passenger Transit
4173	BUS TERMINAL & SERVICE FACILIT	SIC	41	Local & Interurban Passenger Transit
4212	LOCAL TRUCKING WITHOUT STORAGE	SIC	42	Trucking & Warehousing
4213	TRUCKING, EXCEPT LOCAL	SIC	42	Trucking & Warehousing
4214	LOCAL TRUCKING WITH STORAGE	SIC	42	Trucking & Warehousing
4215	COURIER SERVICES, EXCEPT AIR	SIC	42	Trucking & Warehousing
4221	FARM PROD WAREHOUSING & STORAG	SIC	42	Trucking & Warehousing
4222	REFRIGERTAED WAREHOUSING & STO	SIC	42	Trucking & Warehousing
4225	GENERAL WAREHOUSING & STORAGE	SIC	42	Trucking & Warehousing
4226	SPECIAL WAREHOUSING & STORAGE	SIC	42	Trucking & Warehousing
4231	TRUCKING TERMINAL FACILITIES	SIC	42	Trucking & Warehousing
4311	UNITED STATES POSTAL SERVICE	SIC	43	U.S. Postal Service
4412	DEEP SEA FOREIGN TRANSP OF FRE	SIC	44	Water Transportation
4424	DEEP SEA DOMES TRANSP OF FREIG	SIC	44	Water Transportation

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
4432	FREIGHT TRANSP ON THE GR LAKES	SIC	44	Water Transportation
4449	WATER TRANSP OF FREIGHT, NEC	SIC	44	Water Transportation
4481	DEEP SEA PAS TRANSP, EXC FERRY	SIC	44	Water Transportation
4482	FERRIES	SIC	44	Water Transportation
4489	WATER PASSENGER TRANSPORTATION	SIC	44	Water Transportation
4491	MARINE CARGO HANDLING	PSC	442	Transportation Equipment Cleaning
4492	TOWING AND TUGBOAT SERVICE	SIC	44	Water Transportation
4493	MARINAS	SIC	44	Water Transportation
4499	WATER TRANSPORTATION SERIVCES	PSC	442	Transportation Equipment Cleaning
4512	AIR TRANSPORTATION, SCHEDULED	SIC	45	Transportation by Air
4513	AIR COURIER SERVICES	SIC	45	Transportation by Air
4522	AIR TRANSP, NONSCHEDULED	SIC	45	Transportation by Air
4581	AIRPORTS, FLYING FIELDS & SER	PNC	NA	Airport Deicing
4612	CRUDE PETROLEUM PIPELINES	PSC	419	Petroleum refining
4613	REFINED PETROLEUM PIPELINE	SIC	46	Pipelines, Except Natural Gas
4619	PIPELINES, NEC	SIC	46	Pipelines, Except Natural Gas
4724	TRAVEL AGENCIES	SIC	47	Transportation Services
4725	TOUR OPERATORS	SIC	47	Transportation Services
4729	PASSENGER TRANSP ARRANGEMENT	SIC	47	Transportation Services
4731	FREIGHT TRANSP ARRANGEMENT	SIC	47	Transportation Services
4741	RENTAL OF RAILROAD CARS	PSC	442	Transportation Equipment Cleaning
4783	PACKING AND CRATING	SIC	47	Transportation Services
4785	INSPECTION & FIXED FACILITIE	SIC	47	Transportation Services
4789	TRANSPORTATION SERVICES, NEC	SIC	47	Transportation Services
4812	RADIOTELEPHONE COMMUNICATIONS	SIC	48	Communications
4813	TELEPHONE COM, EXCEPT RADIO	SIC	48	Communications
4822	TELEGRAPH & OTHER COMMUNICATI	SIC	48	Communications
4832	RADIO BROADCASTING, NEC	SIC	48	Communications
4833	TELEVISION BROADCASTING	SIC	48	Communications
4841	CABLE & OTHER PAY TV SERVICES	SIC	48	Communications
4899	COMMUNICATION SERVICES, NEC	SIC	48	Communications
4911	ELECTRICAL SERVICES	PSC	423	Steam electric power generation
4922	NATURAL GAS TRANSMISSION	SIC	49	Electric, Gas, & Sanitary Services
4923	NAT GAS TRANSMISSION & DISTRIB	SIC	49	Electric, Gas, & Sanitary Services

Table C-1. SIC/Point Source Category Crosswalk

SIC Code	SIC Description	Type of Grouping	40 CFR Part or SIC Group	Point Source Category
4924	NATURAL GAS DISTRIBUTION	SIC	49	Electric, Gas, & Sanitary Services
4925	MIXED,MANUFAC,OR LIQ GAS PROD	PSC	435	Oil & Gas Extraction
4931	ELEC & OTHER SERVICES COMBINED	PSC	423	Steam electric power generation
4932	GAS & OTHER SERVICES COMBINED	SIC	49	Electric, Gas, & Sanitary Services
4939	COMBINATION UTILITIES, NEC	PSC	423	Steam electric power generation
4941	WATER SUPPLY	PNC	NA	Drinking Water Treatment
4952	SEWERAGE SYSTEMS	SIC	4952	Sewerage Systems
4953	REFUSE SYSTEMS	PSC	444	Waste combustors (commercial incinerators combusting hazardous waste)
4953	REFUSE SYSTEMS	PSC	445	Landfills
4959	SANITARY SERVICES, NEC	SIC	4959	Sanitary Services
4961	STEAM & AIR-CONDITIONING SUP	PSC	423	Steam electric power generation
4971	IRRIGATION SYSTEMS	SIC	49	Electric, Gas, & Sanitary Services
5012	AUTOMOBILES AND OTHER VEHICLES	SIC	50	Wholesale Trade- Durable Goods
5013	MOTOR VEHICLE PARTS & NEW SUP	SIC	50	Wholesale Trade- Durable Goods
5014	TIRES AND TUBES	SIC	50	Wholesale Trade- Durable Goods
5015	MOTOR VEHICLE PARTS, USED	SIC	50	Wholesale Trade- Durable Goods
5021	FURNITURE	SIC	50	Wholesale Trade- Durable Goods
5023	HOMEFURNISHINGS	SIC	50	Wholesale Trade- Durable Goods
5031	LUMBER,PLYWOOD,MILLWORK,& PANL	SIC	50	Wholesale Trade- Durable Goods
5032	BRICK, STONE & RELAT MATERIALS	PSC	436	Mineral Mining and Processing
5033	ROOFING, SIDING AND INSULATION	SIC	50	Wholesale Trade- Durable Goods
5039	CONSTRUCTION MATERIALS, NEC	SIC	50	Wholesale Trade- Durable Goods
5043	PHOTOGRAPHIC EQUIP & SUPPLIES	SIC	50	Wholesale Trade- Durable Goods
5044	OFFICE EQUIPMENT	SIC	50	Wholesale Trade- Durable Goods
5045	COMPUTERS, PERIPHERALS, & SOFT	SIC	50	Wholesale Trade- Durable Goods
5046	COMMERCIAL EQUIPMENT, NEC	SIC	50	Wholesale Trade- Durable Goods
5047	MEDICAL AND OFFICE EQUIPMENT	SIC	50	Wholesale Trade- Durable Goods
5048	OPHTHALMIC GOODS	SIC	50	Wholesale Trade- Durable Goods
5049	PROFESSIONAL EQUIPMENT, NEC	SIC	50	Wholesale Trade- Durable Goods
5051	METAL SERVICE CENTERS & OFFICE	SIC	50	Wholesale Trade- Durable Goods
5052	COAL & OTHER MINERALS & ORES	SIC	50	Wholesale Trade- Durable Goods
5063	ELECTRICAL APPARATUS AND EQUIP	SIC	50	Wholesale Trade- Durable Goods
5064	ELEC APPLIANCES/TV & RADIO SET	SIC	50	Wholesale Trade- Durable Goods

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
5065	ELECTRONIC PARTS AND EQUIPMENT	SIC	50	Wholesale Trade- Durable Goods
5072	HARDWARE	SIC	50	Wholesale Trade- Durable Goods
5074	PLUMB & HEAT EQUIP & SUPPLIES	SIC	50	Wholesale Trade- Durable Goods
5075	AIR HEAT & AIR-COND. EQUIP/SUP	SIC	50	Wholesale Trade- Durable Goods
5078	REFRIGERATION EQUIP & SUPPLIES	SIC	50	Wholesale Trade- Durable Goods
5082	CONST & MINING MACHINE & EQUIP	SIC	50	Wholesale Trade- Durable Goods
5083	FARM & GARDEN MACHINE & EQUIP	SIC	50	Wholesale Trade- Durable Goods
5084	INDUSTRIAL MACHINERY AND EQUIP	SIC	50	Wholesale Trade- Durable Goods
5085	INDUSTRIAL SUPPLIES	SIC	50	Wholesale Trade- Durable Goods
5087	SERVICE ESTABLISH EQUIP & SUPP	SIC	50	Wholesale Trade- Durable Goods
5088	TRANS EQUIP & SUPP, EXC MOTOR	SIC	50	Wholesale Trade- Durable Goods
5091	SPORTING & RECREATIONAL GOODS	SIC	50	Wholesale Trade- Durable Goods
5092	TOYS & HOBBY GOODS & SUPPLIES	SIC	50	Wholesale Trade- Durable Goods
5093	SCRAP & WASTE MATERIALS	SIC	50	Wholesale Trade- Durable Goods
5094	JEWELRY, WATCHES, PRECIOUS STO	SIC	50	Wholesale Trade- Durable Goods
5099	DURABLE GOODS, NEC	SIC	50	Wholesale Trade- Durable Goods
5111	PRINTING AND WRITING PAPER	SIC	51	Wholesale Trade- Nondurable Goods
5112	STATIONERY AND OFFICE SUPPLIES	SIC	51	Wholesale Trade- Nondurable Goods
5113	INDUST & PERSONAL PAPER SERVIC	SIC	51	Wholesale Trade- Nondurable Goods
5122	DRUGS, DRUG PRPPRIE & SUNDRIES	SIC	51	Wholesale Trade- Nondurable Goods
5131	PIECE GOODS AND NOTIONS	SIC	51	Wholesale Trade- Nondurable Goods
5136	MALE'S CLOTHING & FURNISHINGS	SIC	51	Wholesale Trade- Nondurable Goods
5137	WOMEN'S, CHILD & INF CLOTHING	SIC	51	Wholesale Trade- Nondurable Goods
5139	FOOTWEAR	SIC	51	Wholesale Trade- Nondurable Goods
5141	GROCERIES, GENERAL LINE	SIC	51	Wholesale Trade- Nondurable Goods
5142	PACKAGED FROZEN FOODS	SIC	51	Wholesale Trade- Nondurable Goods
5143	DAIRY PROD, EXC DRIED & CANNED	SIC	51	Wholesale Trade- Nondurable Goods
5144	POULTRY AND POULTRY PRODUCTS	PNC	NA	Miscellaneous Foods and Beverages
5145	CONFECTIONERY	SIC	51	Wholesale Trade- Nondurable Goods
5146	FISH AND SEAFOODS	SIC	51	Wholesale Trade- Nondurable Goods
5147	MEATS AND MEAT PRODUCTS	SIC	51	Wholesale Trade- Nondurable Goods
5148	FRESH FRUITS AND VEGETABLES	SIC	51	Wholesale Trade- Nondurable Goods
5149	GROCERIES & RELATED PRODUCTS	SIC	51	Wholesale Trade- Nondurable Goods
5153	GRAIN AND FIELD BEANS	SIC	51	Wholesale Trade- Nondurable Goods

Table C-1. SIC/Point Source Category Crosswalk

SIC Code	SIC Description	Type of Grouping	40 CFR Part or SIC Group	Point Source Category
5154	LIVESTOCK	SIC	51	Wholesale Trade- Nondurable Goods
5159	FARM-PRODUCT RAW MATERIALS	PSC	406	Grain mills manufacturing
5162	PLASTIC MATER & BASIC SHAPES	SIC	51	Wholesale Trade- Nondurable Goods
5169	CHEMICALS AND ALLIED PRODUCTS	PSC	414	Organic chemicals, plastics and synthetic fibers
5171	PETROLEUM BULK STATIONS & TERM	PSC	419	Petroleum refining
5172	PETROL & PET PROD WHOLESALERS	SIC	51	Wholesale Trade- Nondurable Goods
5181	BEER AND ALE	SIC	51	Wholesale Trade- Nondurable Goods
5182	WINE & DIST ALCOHOLIC BEVERAGE	PNC	NA	Miscellaneous Foods and Beverages
5191	FARM SUPPLIES	SIC	51	Wholesale Trade- Nondurable Goods
5192	BOOKS, PERIODICALS & NEWSPAPER	SIC	51	Wholesale Trade- Nondurable Goods
5193	FLOWERS AND FLORISTS' SUPPLIES	SIC	51	Wholesale Trade- Nondurable Goods
5194	TOBACCO AND TOBACCO PRODUCTS	SIC	51	Wholesale Trade- Nondurable Goods
5198	PAINTS, VARNISHES AND SUPPLIES	SIC	51	Wholesale Trade- Nondurable Goods
5199	NONDURABLE GOODS, NEC	SIC	51	Wholesale Trade- Nondurable Goods
5211	LUMBER & BUILD MATERIAL DEALER	SIC	52	Building Materials& Gardening Supplies
5231	PAINT, GLASS & WALLPAPER STORE	SIC	52	Building Materials& Gardening Supplies
5251	HARDWARE STORES	SIC	52	Building Materials& Gardening Supplies
5261	RET NURSERIES,LAWN/GARDN STORE	SIC	52	Building Materials& Gardening Supplies
5271	MOBILE HOME DEALERS	SIC	52	Building Materials& Gardening Supplies
5311	DEPARTMENT STORES	SIC	53	General Merchandise Stores
5331	VARIETY STORES	SIC	53	General Merchandise Stores
5399	MISCELLANEOUS GENERAL STORES	SIC	53	General Merchandise Stores
5411	GROCERY STORES	SIC	54	Food Stores
5421	MEAT AND FISH MARKETS	SIC	54	Food Stores
5431	FRUIT AND VEGETABLE MARKETS	SIC	54	Food Stores
5441	CANDY, NUT & CONFECTION STORES	SIC	54	Food Stores
5451	DAIRY PRODUCTS STORES	SIC	54	Food Stores
5461	RETAIL BAKERIES	SIC	54	Food Stores
5499	MISCELLANEOUS FOOD STORES	SIC	54	Food Stores
5511	MOTOR VEH. DEALERS (NEW/USED)	SIC	55	Automotive Dealers & Service Stations
5521	MOTOR VEH. DEALERS (USED ONLY)	SIC	55	Automotive Dealers & Service Stations
5531	AUTO AND HOME SUPPLY STORES	SIC	55	Automotive Dealers & Service Stations
5541	GASOLINE SERVICE STATIONS	SIC	55	Automotive Dealers & Service Stations
5551	BOAT DEALERS	SIC	55	Automotive Dealers & Service Stations

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SIC Code	SIC Description	Type of Grouping	40 CFR Part or SIC Group	Point Source Category
5561	RECREATIONAL VEHICLE DEALERS	SIC	55	Automotive Dealers & Service Stations
5571	MOTORCYCLE DEALERS	SIC	55	Automotive Dealers & Service Stations
5599	AUTOMOTIVE DEALERS, NEC	SIC	55	Automotive Dealers & Service Stations
5611	MALE'S CLOTHING & ACCESS STORE	SIC	56	Apparel & Accessory Stores
5621	WOMEN'S CLOTHING STORES	SIC	56	Apparel & Accessory Stores
5632	WOMEN'S ACCESS & SPEC STORES	SIC	56	Apparel & Accessory Stores
5641	CHILDREN'S & INF WEAR STORES	SIC	56	Apparel & Accessory Stores
5651	FAMILY CLOTHING STORES	SIC	56	Apparel & Accessory Stores
5661	SHOE STORES	SIC	56	Apparel & Accessory Stores
5699	MISC APPAREL & ACCESS STORES	SIC	56	Apparel & Accessory Stores
5712	FURNITURE STORES	SIC	57	Furniture & Homefurnishings Stores
5713	FLOOR COVERING STORES	SIC	57	Furniture & Homefurnishings Stores
5714	DRAPE, CURTAIN & UPHOL STORES	SIC	57	Furniture & Homefurnishings Stores
5719	MISC HOMEFURNISHINGS STORES	SIC	57	Furniture & Homefurnishings Stores
5722	HOUSEHOLD APPLIANCE STORES	SIC	57	Furniture & Homefurnishings Stores
5731	RADIO, TV & ELECTRONICS STORES	SIC	57	Furniture & Homefurnishings Stores
5734	COMPUTER AND SOFTWARE STORES	SIC	57	Furniture & Homefurnishings Stores
5735	RECORD & PRERECORDED TAPE STOR	SIC	57	Furniture & Homefurnishings Stores
5736	MUSICAL INSTRUMENT STORES	SIC	57	Furniture & Homefurnishings Stores
5812	EATING PLACES	PNC	NA	Food Service Establishments
5813	DRINKING PLACES (ALCOHOLIC BEV	SIC	58	Eating & Drinking Places
5912	DRUG STORES & PROPRIETARY STOR	SIC	59	Miscellaneous Retail
5921	LIQUOR STORES	SIC	59	Miscellaneous Retail
5932	USED MERCHANDISE STORES	SIC	59	Miscellaneous Retail
5941	SPORTING GOODS/BICYCLE STORES	SIC	59	Miscellaneous Retail
5942	BOOK STORES	SIC	59	Miscellaneous Retail
5943	STATIONERY STORES	SIC	59	Miscellaneous Retail
5944	JEWELRY STORES	SIC	59	Miscellaneous Retail
5945	HOBBY, TOY AND GAME SHOPS	SIC	59	Miscellaneous Retail
5946	CAMERA & PHOTO SUPPLY STORES	SIC	59	Miscellaneous Retail
5947	GIFT, NOVELTY & SOUVENIR SHOPS	SIC	59	Miscellaneous Retail
5948	LUGGAGE & LEATHER GOODS STORES	SIC	59	Miscellaneous Retail
5949	SEW/NEEDLEWK/PIECE GOODS STORE	SIC	59	Miscellaneous Retail
5961	CATALOG AND MAIL-ORDER HOUSES	SIC	59	Miscellaneous Retail

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SIC Code	SIC Description	Type of Grouping	40 CFR Part or SIC Group	Point Source Category
5962	AUTO MERCHANDIS MACHINE OPERAT	SIC	59	Miscellaneous Retail
5963	DIRECT SELLING ESTABLISHMENTS	SIC	59	Miscellaneous Retail
5983	FUEL OIL DEALERS	SIC	59	Miscellaneous Retail
5984	LIQ PETROL GAS (BOT GAS) DEALR	SIC	59	Miscellaneous Retail
5989	FUEL DEALERS, NEC	SIC	59	Miscellaneous Retail
5992	FLORISTS	SIC	59	Miscellaneous Retail
5993	TOBACCO STORES AND STANDS	SIC	59	Miscellaneous Retail
5994	NEWS DEALERS AND NEWSSTANDS	SIC	59	Miscellaneous Retail
5995	OPTICAL GOODS STORES	SIC	59	Miscellaneous Retail
5999	MISCELLANEOUS RETAIL STORES	SIC	59	Miscellaneous Retail
6011	FEDERAL RESERVE BANKS	SIC	60	Depository Institutions
6019	CENTRAL RESERVE REPOSITORY	SIC	60	Depository Institutions
6021	NATIONAL COMMERCIAL BANKS	SIC	60	Depository Institutions
6022	STATE COMMERCIAL BANKS	SIC	60	Depository Institutions
6029	COMMERCIAL BANKS, NEC	SIC	60	Depository Institutions
6035	FEDERAL SAVINGS INSTITUTIONS	SIC	60	Depository Institutions
6036	SAVINGS INSTITUTIONS, EXC FED	SIC	60	Depository Institutions
6061	FEDERAL CREDIT UNIONS	SIC	60	Depository Institutions
6062	STATE CREDIT UNIONS	SIC	60	Depository Institutions
6081	FOREIGN BANK & BRANCHES & AGEN	SIC	60	Depository Institutions
6082	FOREIGN TRADE & INTERNAT BANKS	SIC	60	Depository Institutions
6091	NONDEPOSIT TRUST FACILITIES	SIC	60	Depository Institutions
6099	FUNCT RELATED TO DEP BANKING	SIC	60	Depository Institutions
6111	FEDERAL & FED-SPONSORED CREDIT	SIC	61	Nondepository Institutions
6141	PERSONAL CREDIT INSTITUTIONS	SIC	61	Nondepository Institutions
6153	SHORT-TERM BUS. CREDIT INSTITU	SIC	61	Nondepository Institutions
6159	MISC BUSINESS CREDIT INSTITUTI	SIC	61	Nondepository Institutions
6162	MORTG BANKERS & LOAN CORRESPON	SIC	61	Nondepository Institutions
6163	LOAN BROKERS	SIC	61	Nondepository Institutions
6211	SEC BROKERS/DEALERS/FLOTAT. CO	SIC	62	Security & Commodity Brokers
6221	COMMODITY CONTR BROKERS & DEAL	SIC	62	Security & Commodity Brokers
6231	SECURITY & COMMODITY EXCHANGES	SIC	62	Security & Commodity Brokers
6282	INVESTMENT ADVICE	SIC	62	Security & Commodity Brokers
6289	SECURITY & COMMODITY SERVICES	SIC	62	Security & Commodity Brokers

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
6311	LIFE INSURANCE	SIC	63	Insurance Carriers
6321	ACCIDENT AND HEALTH INSURANCE	SIC	63	Insurance Carriers
6324	HOSPITAL & MEDICAL SERV PLANS	SIC	63	Insurance Carriers
6331	FIRE, MARINE & CASUALTY INSUR	SIC	63	Insurance Carriers
6351	SURETY INSURANCE	SIC	63	Insurance Carriers
6361	TITLE INSURANCE	SIC	63	Insurance Carriers
6371	PENSION, HEALTH & WELFARE FUND	SIC	63	Insurance Carriers
6399	INSURANCE CARRIERS, NEC	SIC	63	Insurance Carriers
6411	INSUR AGENTS, BROKERS, & SERVI	SIC	64	Insurance Agents, Brokers, & Service
6512	OPER OF NONRESIDENTIAL BLDGS	SIC	65	Real Estate
6513	OPERATORS OF APART BUILDINGS	SIC	65	Real Estate
6514	OPER OF DWELL OTHER THAN APART	SIC	65	Real Estate
6515	OPER OF RES MOBILE HOME SITES	SIC	65	Real Estate
6517	LESSORS OF RAILROAD PROPERTIES	SIC	65	Real Estate
6519	LESSORS OF REAL PROPERTY, NEC	SIC	65	Real Estate
6531	REAL ESTATE AGENTS & MANAGERS	SIC	65	Real Estate
6541	TITLE ABSTRACT OFFICES	SIC	65	Real Estate
6552	LAND SUBDIVIDERS & DEV, EX CEM	SIC	65	Real Estate
6553	CEMETERY SUBDIVIDERS & DEVELOP	SIC	65	Real Estate
6712	BANK HOLDING COMPANIES	SIC	67	Holding & Other Investment Offices
6719	HOLDING COMPANIES, NEC	SIC	67	Holding & Other Investment Offices
6722	MGMT INVEST. OFFICES, OPEN END	SIC	67	Holding & Other Investment Offices
6726	INVESTMENT OFFICES, NEC	SIC	67	Holding & Other Investment Offices
6732	EDUCAT.,RELIG & CHARITY TRUSTS	SIC	67	Holding & Other Investment Offices
6733	TRUSTS,EXC EDUCAT,RELIG & CHAR	SIC	67	Holding & Other Investment Offices
6792	OIL ROYALTY TRADERS	SIC	67	Holding & Other Investment Offices
6794	PATENT OWNERS AND LESSORS	SIC	67	Holding & Other Investment Offices
6798	REAL ESTATE INVESTMENT TRUSTS	SIC	67	Holding & Other Investment Offices
6799	INVESTORS, NEC	SIC	67	Holding & Other Investment Offices
7011	HOTELS AND MOTELS	SIC	70	Hotels & Other Lodging Places
7021	ROOMING AND BOARDING HOUSES	SIC	70	Hotels & Other Lodging Places
7032	SPORTING & RECREATIONAL CAMPS	SIC	70	Hotels & Other Lodging Places
7033	REC VEHICLE PARKS & CAMPSITES	SIC	70	Hotels & Other Lodging Places
7041	ORG. HOTEL & LODG HSE, ON MEMB	SIC	70	Hotels & Other Lodging Places



**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
7211	POWER LAUNDRIES, RES & COMMERC	SIC	72	Personal Services- SIC 72
7212	GARM PRESSING/LAUNDRIES/DRYCLE	SIC	72	Personal Services- SIC 72
7213	LINEN SUPPLY	SIC	72	Personal Services- SIC 72
7215	COIN-OPERATED LAUNDRIES/DRYCLE	SIC	72	Personal Services- SIC 72
7216	DRYCLEAN PLANTS, EXC RUG CLEAN	SIC	72	Personal Services- SIC 72
7217	CARPET & UPHOLSTERY CLEANING	SIC	72	Personal Services- SIC 72
7218	INDUSTRIAL LAUNDERERS	PNC	NA	Industrial Laundries
7219	LAUNDRY & GARMENT SERVICES, NEC	SIC	72	Personal Services- SIC 72
7221	PHOTOGRAPHIC STUDIOS, POTRAIT	PNC	NA	Photo Processing
7221	PHOTOGRAPHIC STUDIOS, POTRAIT	PSC	459	Photographic
7231	BEAUTY SHOPS	SIC	72	Personal Services- SIC 72
7241	BARBER SHOPS	SIC	72	Personal Services- SIC 72
7251	SHOE REP SHOPS & SHOESHINE PAR	SIC	72	Personal Services- SIC 72
7261	FUNERAL SERVICES & CREMATORIES	SIC	72	Personal Services- SIC 72
7291	TAX AND PREPARATION SERVICES	SIC	72	Personal Services- SIC 72
7299	MISCELLANEOUS PERSONAL SERVICE	SIC	72	Personal Services- SIC 72
7311	ADVERTISING AGENCIES	SIC	73	Business Services
7312	OUTDOOR ADVERTISING AGENCIES	SIC	73	Business Services
7313	RADIO, TV & PUBLISHERS AD REPS	SIC	73	Business Services
7319	ADVERTISING, NEC	SIC	73	Business Services
7322	ADJUSTMENT & COLLECT SERVICES	SIC	73	Business Services
7323	CREDIT REPORTING SERVICES	SIC	73	Business Services
7331	DIRECT MAIL ADVERTIS SERVICES	SIC	73	Business Services
7334	PHOTOCOPYING/DUPPLICATING SERV	SIC	73	Business Services
7335	COMMERCIAL PHOTOGRAPHY	PNC	NA	Photo Processing
7335	COMMERCIAL PHOTOGRAPHY	PSC	459	Photographic
7336	COMM ART & GRAPHIC DESIGN	PNC	NA	Photo Processing
7336	COMM ART & GRAPHIC DESIGN	PSC	459	Photographic
7338	SECRETARIAL & COURT REPORTING	SIC	73	Business Services
7342	DISINFECTING & EXTERMINAT SERV	SIC	73	Business Services
7349	BUILDING MAINTNENANCE SERVICE	SIC	73	Business Services
7352	MEDICAL EQUIPMENT RENTAL	SIC	73	Business Services
7353	HEAVY CONSTRUCTON EQUIP RENTAL	SIC	73	Business Services
7359	EQUIPMENT RENTAL AND LEASING,	SIC	73	Business Services

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
7361	EMPLOYMENT AGENCIES	SIC	73	Business Services
7363	HELP SUPPLY SERVICES	SIC	73	Business Services
7371	CUSTOM COMPUTER PROG SERVICES	SIC	73	Business Services
7372	PREPACKAGED SOFTWARE	SIC	73	Business Services
7373	COMPUTER INTEGRATED SYS DESIGN	SIC	73	Business Services
7374	DATA PROCESSING & PREPARATION	SIC	73	Business Services
7375	INFORMATION RETRIEVAL SERVICES	SIC	73	Business Services
7376	COMPUTER FACILITIES MANAGEMENT	SIC	73	Business Services
7377	COMPUTER RENTAL AND LEASING	SIC	73	Business Services
7378	COMPUTER MAINTENANCE & REPAIR	SIC	73	Business Services
7379	COMPUTER RELATED SERVICES, NEC	SIC	73	Business Services
7381	DETECTIVE & ARMORED CAR SERVIC	SIC	73	Business Services
7382	SECURITY SYSTEMS SERVICES	SIC	73	Business Services
7383	NEWS SYNDICATES	SIC	73	Business Services
7384	PHOTOFINISHING LABORATORIES	PNC	NA	Photo Processing
7384	PHOTOFINISHING LABORATORIES	PSC	459	Photographic
7389	BUSINESS SERVICES, NEC	SIC	73	Business Services
7513	TRUCK RENT & LEASE, NO DRIVERS	SIC	75	Auto Repair, Services, & Parking
7514	PASSENGER CAR RENTAL	SIC	75	Auto Repair, Services, & Parking
7515	PASSENGER CAR LEASING	SIC	75	Auto Repair, Services, & Parking
7519	UTILITY TRAILER & RV RENTAL	SIC	75	Auto Repair, Services, & Parking
7521	AUTOMOBILE PARKING	SIC	75	Auto Repair, Services, & Parking
7532	TOP & BODY REPAIR & PAINT SHOP	SIC	75	Auto Repair, Services, & Parking
7533	AUTO EXHAUST SYSTEM REP SHOPS	SIC	75	Auto Repair, Services, & Parking
7534	TIRE RETREADING & REPAIR SHOPS	SIC	75	Auto Repair, Services, & Parking
7536	AUTO GLASS REPLACEMENT SHOPS	SIC	75	Auto Repair, Services, & Parking
7537	AUTO TRANSMISSION REPAIR SHOPS	SIC	75	Auto Repair, Services, & Parking
7538	GENERAL AUTO REPAIR SHOPS	SIC	75	Auto Repair, Services, & Parking
7539	AUTOMOTIVE REPAIR SHOPS, NEC	SIC	75	Auto Repair, Services, & Parking
7542	CAR WASHES	SIC	75	Auto Repair, Services, & Parking
7549	AUTO SERV, EXC REP & CARWASHES	SIC	75	Auto Repair, Services, & Parking
7622	RADIO & TELEVISION REPAIR SHOP	SIC	76	Miscellaneous Repair Services
7623	REFRIG & AC SERV & REP SHOPS	SIC	76	Miscellaneous Repair Services
7629	ELEC & ELECTRONIC REPAIR SHOPS	SIC	76	Miscellaneous Repair Services

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
7631	WATCH, CLOCK & JEWELRY REPAIR	SIC	76	Miscellaneous Repair Services
7641	REUPHOLSTERY & FURNITURE REP	SIC	76	Miscellaneous Repair Services
7692	WELDING REPAIR	PSC	433	Metal Finishing
7694	ARMATURE REWINDING SHOPS	SIC	76	Miscellaneous Repair Services
7699	REPAIR SHOPS & RELATED SERVICE	PSC	442	Transportation Equipment Cleaning
7812	MOTION PICTURE & VIDEO PROD	SIC	78	Motion Pictures
7819	SERV. ALLIED TO MOTION PICTURE	SIC	78	Motion Pictures
7822	MOTION PICTURE & TAPE DISTRIB	SIC	78	Motion Pictures
7829	SERV ALLIED TO MOTION PIC DIST	SIC	78	Motion Pictures
7832	MOTION PIC THEA., EX DRIVE-IN	SIC	78	Motion Pictures
7833	DRIVE-IN MOTION PIC THEATRES	SIC	78	Motion Pictures
7841	VIDEO TAPE RENTAL	SIC	78	Motion Pictures
7911	DANCE STUDIOS, SCHOOLS & HALLS	SIC	79	Amusement & Recreation Services
7922	THEA. PROD (EXC MOTION PICTURE	SIC	79	Amusement & Recreation Services
7929	BANDS, ORCH, ACTORS & ENTERTAI	SIC	79	Amusement & Recreation Services
7933	BOWLING CENTERS	SIC	79	Amusement & Recreation Services
7941	PROF SPORTS CLUBS & PROMOTERS	SIC	79	Amusement & Recreation Services
7948	RACING, INCLUDING TRACK OPERA	SIC	79	Amusement & Recreation Services
7991	PHYSICAL FITNESS FACILITIES	SIC	79	Amusement & Recreation Services
7992	PUBLIC GOLF COURSES	SIC	79	Amusement & Recreation Services
7993	COIN OPERATED AMUSEMENT DEVI	SIC	79	Amusement & Recreation Services
7996	AMUSEMENT PARKS	SIC	79	Amusement & Recreation Services
7997	MEMBERSHIP SPORTS & REC CLUBS	SIC	79	Amusement & Recreation Services
7999	AMUSEMENT AND RECREATION, NEC	SIC	79	Amusement & Recreation Services
8011	OFFICES & CLINICS OF MED DOCT	PSC	460	Health Services Industries
8021	OUTPATIENT CARE FACILITIES	PSC	460	Health Services Industries
8031	OFFICES/CLINCS OF DOC OF OSTEO	PSC	460	Health Services Industries
8041	OFFICES & CLINICS OF CHIROPRACT	PSC	460	Health Services Industries
8042	OFFICES & CLINICS OF OPTOMETRI	PSC	460	Health Services Industries
8043	OFFICES & CLINICS OF PODIATRIS	PSC	460	Health Services Industries
8049	OFFICES OF HEALTH PRACTITIONER	PSC	460	Health Services Industries
8051	SKILLED NURSING CARE FACILITIE	PSC	460	Health Services Industries
8052	INTERMEDIATE CARE FACILITIES	PSC	460	Health Services Industries
8059	NURSING AND PERSONAL CARE, NEC	PSC	460	Health Services Industries

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
8062	GEN. MEDICAL/SURGICAL HOSPITAL	PSC	460	Health Services Industries
8063	PSYCHIATRIC HOSPITALS	PSC	460	Health Services Industries
8069	SPECIALTY HOSPITALS	PSC	460	Health Services Industries
8071	MEDICAL LABORATORIES	PSC	460	Health Services Industries
8072	DENTAL LABORATORIES	PSC	460	Health Services Industries
8082	HOME HEALTH CARE SERVICES	PSC	460	Health Services Industries
8092	KIDNEY DIALYSIS CENTERS	PSC	460	Health Services Industries
8093	SPECIALITY OUTPATIENT CLINICS	PSC	460	Health Services Industries
8099	HEALTH & ALLIED SERVICES, NEC	PSC	460	Health Services Industries
8111	LEGAL SERVICES	SIC	81	Legal Services
8211	ELEMENTARY & SECONDARY SCHOOLS	SIC	82	Educational Services
8221	COLLEGES, UNIV & PROF SCHOOLS	SIC	82	Educational Services
8222	JUNIOR COLLEGES & TECH INSTITU	SIC	82	Educational Services
8231	LIBRARIES	SIC	82	Educational Services
8243	DATA PROCESSING SCHOOLS	SIC	82	Educational Services
8244	BUSINESS & SECRETARIAL SCHOOLS	SIC	82	Educational Services
8249	VOCATIONAL SCHOOLS, NEC	SIC	82	Educational Services
8299	SCHOOLS & EDUCATIONAL SERVICES	SIC	82	Educational Services
8322	INDIVIDUAL AND FAMILY SERVICES	SIC	83	Social Services
8331	JOB TRAINING & VOC REHAB SERVI	SIC	83	Social Services
8351	CHILD DAY CARE SERVICES	SIC	83	Social Services
8361	RESIDENTIAL CARE	SIC	83	Social Services
8399	SOCIAL SERVICES, NEC	SIC	83	Social Services
8412	MUSEUMS AND ART GALLERIES	SIC	84	Museums, Botanical, Zoological Gardens
8422	BOTANICAL & ZOOLOGICAL GARDENS	SIC	84	Museums, Botanical, Zoological Gardens
8611	BUSINESS ASSOCIATIONS	SIC	86	Membership Organizations
8621	PROFESSIONAL MEMBERSHIP ORGAN	SIC	86	Membership Organizations
8631	LABOR UNIONS & LABOR ORGANIZA	SIC	86	Membership Organizations
8641	CIVIC, SOCIAL & FRATERNAL ASS.	SIC	86	Membership Organizations
8651	POLITICAL ORGANIZATIONS	SIC	86	Membership Organizations
8661	RELIGIOUS ORGANIZATIONS	SIC	86	Membership Organizations
8699	MEMBERSHIP ORGANIZATIONS, NEC	SIC	86	Membership Organizations
8711	ENGINEERING SERVICES	SIC	87	Engineering & Management Services
8712	ARCHITECTURAL SERVICES	SIC	87	Engineering & Management Services

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
8713	SURVEYING SERVICES	SIC	87	Engineering & Management Services
8721	ACC., AUDITING & BOOKKEEPING	SIC	87	Engineering & Management Services
8731	COMMERCIAL PHYSICAL RESEARCH	PNC	NA	Independent and Stand Alone Labs
8732	COMMERCIAL NONPHYSICAL RESEAR	SIC	87	Engineering & Management Services
8733	NONCOMMERCIAL RESEARCH ORGANI	SIC	87	Engineering & Management Services
8734	COMMERCIAL TESTING LABORATORY	PNC	NA	Independent and Stand Alone Labs
8741	MANAGEMENT SERVICES	SIC	87	Engineering & Management Services
8742	MANAGEMENT CONSULTING SERVICE	SIC	87	Engineering & Management Services
8743	PUBLIC RELATIONS SERVICES	SIC	87	Engineering & Management Services
8744	FACILITIES SUPPORT SERVICES	SIC	87	Engineering & Management Services
8748	BUSINESS CONSULTING, NEC	SIC	87	Engineering & Management Services
8811	PRIVATE HOUSEHOLDS	SIC	88	Private Households
8999	SERVICES, NEC	SIC	89	Services, Not Elsewhere Classified
9111	EXECUTIVE OFFICES	SIC	91	Executive, Legislative, & General
9121	LEGISLATIVE BODIES	SIC	91	Executive, Legislative, & General
9131	EXEC & LEGIS OFFICES COMBINED	SIC	91	Executive, Legislative, & General
9199	GENERAL GOVERNMENT, NEC	SIC	91	Executive, Legislative, & General
9211	COURTS	SIC	92	Justice, Public Order, & Safety
9221	POLICE PROTECTION	SIC	92	Justice, Public Order, & Safety
9222	LEGAL COUNSEL & PROSECUTION	SIC	92	Justice, Public Order, & Safety
9223	CORRECTIONAL INSTITUTIONS	SIC	92	Justice, Public Order, & Safety
9224	FIRE PROTECTION	SIC	92	Justice, Public Order, & Safety
9229	PUBLIC ORDER AND SAFETY, NEC	SIC	92	Justice, Public Order, & Safety
9311	PUBLIC FINANCE	SIC	93	Finance, Taxation, & Monetary Policy
9411	ADMINISTRATION OF EDUCAT PROG	SIC	94	Administration of Human Resources
9431	ADMIN OF PUB HEALTH PROGRAMS	SIC	94	Administration of Human Resources
9441	ADM OF SOCIAL/HUMAN RESOURCE	SIC	94	Administration of Human Resources
9451	ADM OF VET AFFAIRS, EX HEA/INS	SIC	94	Administration of Human Resources
9511	AIR & WATER RES & SOL WSTE MGT	SIC	95	Environmental Quality & Housing
9512	LAND, MIN, WILDLIFE/FOREST CON	SIC	95	Environmental Quality & Housing
9531	ADMIN OF HOUSING PROGRAMS	SIC	95	Environmental Quality & Housing
9532	ADM OF URB PLAN/COMM/RURL DEV	SIC	95	Environmental Quality & Housing
9611	ADMIN OF GENERAL ECONOMIC PRO	SIC	96	Administration of Economic Programs
9621	REG & ADMIN OF TRANS PROGRAMS	SIC	96	Administration of Economic Programs

Table C-1. SIC/Point Source Category Crosswalk

SIC Code	SIC Description	Type of Grouping	40 CFR Part or SIC Group	Point Source Category
9631	REG & ADM OF COMMS, ELEC, GAS	SIC	96	Administration of Economic Programs
9641	REG OF AGRI MARKETING & COMMOD	SIC	96	Administration of Economic Programs
9651	REG, LIC & INSP OF COMM SECTOR	SIC	96	Administration of Economic Programs
9661	SPACE RESEARCH AND TECHNOLOGY	SIC	96	Administration of Economic Programs
9711	NATIONAL SECURITY	SIC	97	National Security & International Affairs
9721	INTERNATIONAL SECURITY	SIC	97	National Security & International Affairs
9999	NONCLASSIFIABLE ESTABLISHMENTS	SIC	99	Non classifiable Establishments
2048g	PREP FEEDS & INGRED FOR ANIMA	PSC	406	Grain mills manufacturing
2048m	PREP FEEDS & INGRED FOR ANIMA	PSC	432	Meat and Poultry Products
2048P	PREP FEEDS & INGRED FOR ANIMA	PSC	455	Pesticide chemicals manufacturing
2048ph	PREP FEEDS & INGRED FOR ANIMA	PSC	439	Pharmaceutical manufacturing
2611-1	PULP MILLS- Phase I	PSC	430	Pulp, paper and paperboard
2611-2	PULP MILLS- Phase II	PSC	430	Pulp, paper and paperboard
2611-3	PULP MILLS- Phase III	PSC	430	Pulp, paper and paperboard
2621-1	PAPER MILLS- Phase I	PSC	430	Pulp, paper and paperboard
2621-2	PAPER MILLS- Phase II	PSC	430	Pulp, paper and paperboard
2621-3	PAPER MILLS- Phase III	PSC	430	Pulp, paper and paperboard
2631-1	PAPERBOARD MILLS- Phase I	PSC	430	Pulp, paper and paperboard
2631-2	PAPERBOARD MILLS- Phase II	PSC	430	Pulp, paper and paperboard
2631-3	PAPERBOARD MILLS- Phase III	PSC	430	Pulp, paper and paperboard
2819N	INDUSTRIAL INORGANIC CHEMICALS	PSC	421	Nonferrous metals manufacturing
2819Ph	INDUSTRIAL INORGANIC CHEMICALS	PSC	422	Phosphate manufacturing
2821P	PLSTC MAT./SYN RESINS/NV ELAST	PSC	455	Pesticide chemicals manufacturing
2823P	CELLULOSIC MAN-MADE FIBERS	PSC	455	Pesticide chemicals manufacturing
2824P	SYN ORG FIBERS,EXCEPT CELLULOS	PSC	455	Pesticide chemicals manufacturing
2834P	PHARMACEUTICAL PREPARATIONS	PSC	455	Pesticide chemicals manufacturing
2842P	SPECIALTY CLEANING, POLISHING	PSC	455	Pesticide chemicals manufacturing
2844P	PERFUMES,COSMETICS,TOILET PREP	PSC	455	Pesticide chemicals manufacturing
2865P	CYCLIC CRUDES INTERM., DYES	PSC	455	Pesticide chemicals manufacturing
2869P	INDUST. ORGANIC CHEMICALS NEC	PSC	455	Pesticide chemicals manufacturing
2874F	PHOSPHATIC FERTILIZERS	PSC	418	Fertilizer manufacturing
2891P	ADHESIVES AND SEALANTS	PSC	455	Pesticide chemicals manufacturing
2899P	CHEMICALS & CHEM PREP, NEC	PSC	455	Pesticide chemicals manufacturing
5169P	CHEMICALS AND ALLIED PRODUCTS	PSC	455	Pesticide chemicals manufacturing

**Table C-1. SIC/Point Source Category Crosswalk**

<b>SIC Code</b>	<b>SIC Description</b>	<b>Type of Grouping</b>	<b>40 CFR Part or SIC Group</b>	<b>Point Source Category</b>
CWT	CENTRALIZED WASTE TREATERS	PSC	437	Centralized Waste Treaters
MPM	METAL PRODUCTS AND MACHINERY	PSC	438	Metal Products and Machinery
VCCA	CHLORINE AND CHLORINATED HYDROCARBONS	PNS	414.1	Chlorine and Chlorinated Hydrocarbons (CCH)
VCCAP	CHLORINE AND CHLORINATED HYDROCARBONS PESTICIDES	PSC	455	Pesticide chemicals manufacturing

PSC – Point Source Category.

PNC – Potential new category.

PNS - Potential new subcategory.

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
0101	COCOA	1	Agricultural Production - Crops
0111	WHEAT	1	Agricultural Production - Crops
0112	RICE	1	Agricultural Production - Crops
0115	CORN	1	Agricultural Production - Crops
0116	SOYBEANS	1	Agricultural Production - Crops
0119	CASH GRAINS, NEC	1	Agricultural Production - Crops
0131	COTTON	1	Agricultural Production - Crops
0132	TOBACCO	1	Agricultural Production - Crops
0133	SUGARCANE AND SUGAR BEETS	1	Agricultural Production - Crops
0134	IRISH POTATOES	1	Agricultural Production - Crops
0139	CROPS, EXCEPT CASH GRAINS, NEC	1	Agricultural Production - Crops
0161	VEGETABLES AND MELONS	1	Agricultural Production - Crops
0171	BERRY CROPS	1	Agricultural Production - Crops
0172	GRAPES	1	Agricultural Production - Crops
0173	TREE NUTS	1	Agricultural Production - Crops
0174	CITRUS FRUITS	1	Agricultural Production - Crops
0175	DECIDUOUS TREE FRUITS	1	Agricultural Production - Crops
0179	FRUITS AND TREE NUTS, NEC	1	Agricultural Production - Crops
0181	ORNAMENTAL NURSERY PRODUCTS	1	Agricultural Production - Crops
0182	FOOD CROPS GROWN UNDER COVER	1	Agricultural Production - Crops
0191	GENERAL FARMS, PRIMARILY CROP	1	Agricultural Production - Crops
0271	FUR-BEARING ANIMALS & RABBITS	2	Agricultural Production - Livestock
0279	ANIMAL SPECIALTIES, NEC	2	Agricultural Production - Livestock
0291	FARMS, PRIMARILY LIVESTOCK	2	Agricultural Production - Livestock
0711	SOIL PREPARATION SERVICES	7	Agricultural Services
0721	CROP PLANTING & PROTECTION	7	Agricultural Services



**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
0722	HARVESTING, PRIMARILY MACHINE	7	Agricultural Services
0723	CROP PREP SERVICES FOR MARKET	7	Agricultural Services
0724	COTTON GINNING	7	Agricultural Services
0751	LIVESTOCK SERVICES, EXCEPT VET	7	Agricultural Services
0752	ANIMAL SPECIAL SERV EXCEPT VET	7	Agricultural Services
0761	FARM LABOR CONTRACT & CREW	7	Agricultural Services
0762	FARM MANAGEMENT SERVICES	7	Agricultural Services
0781	LANDSCAPE COUNSELING AND PLAN	7	Agricultural Services
0782	LAWN AND GARDEN SERVICES	7	Agricultural Services
0783	ORNAMENTAL SHRUB AND TREE SERV	7	Agricultural Services
0811	TIMBER TRACTS	8	Forestry
0831	FOREST PRODUCTS	8	Forestry
0851	FORESTRY SERVICES	8	Forestry
0912	FINFISH	9	Fishing, Hunting, & Trapping
0913	SHELLFISH	9	Fishing, Hunting, & Trapping
0919	MISCELLANEOUS MARINE PRODUCTS	9	Fishing, Hunting, & Trapping
0971	HUNT & TRAP & GAME PROPOGATION	9	Fishing, Hunting, & Trapping
1241	COAL MINING SERVICE	12	Coal Mining - SIC 12
1321	NATURAL GAS LIQUIDS	13	Natural Gas Liquids
1521	CONTRACTORS-SINGLE FAMILY HOUS	15	General Building Contractors
1522	GEN CONTRACT-RES, NOT SINFA	15	General Building Contractors
1531	OPERATIVE BUILDERS	15	General Building Contractors
1541	GEN CONTRACT-INDUST. BLDGS.	15	General Building Contractors
1542	GEN CONTRACT, NON-RES BLDGS.	15	General Building Contractors
1611	HWY & ST CONST., EXC. ELEV HWY	16	Heavy Construction, Except Building
1622	BRIDGE, TUNNEL & ELEV HWY CONS	16	Heavy Construction, Except Building

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
1623	H2O, SEW, PIPE & COM. & POWR	16	Heavy Construction, Except Building
1711	PLUMB, HEAT & AIR CONDITIONING	17	Special Trade Contractors
1721	PAINTING AND PAPER HANGING	17	Special Trade Contractors
1731	ELECTRICAL WORK	17	Special Trade Contractors
1741	MASONRY, STONE SET, STONE WORK	17	Special Trade Contractors
1742	PLSTR, DRYWALL, ACOUS, & INSUL	17	Special Trade Contractors
1743	TERRAZZO, TILE, MARBLE, MOSAIC	17	Special Trade Contractors
1751	CARPENTRY WORK	17	Special Trade Contractors
1752	FLOOR LAY & OTHER FLOOR WORK	17	Special Trade Contractors
1761	ROOF, SIDE & SHEET METAL WORK	17	Special Trade Contractors
1771	CONCRETE WORK	17	Special Trade Contractors
1781	WATER WELL DRILLING	17	Special Trade Contractors
1791	STRUCTURAL STEEL ERECTION	17	Special Trade Contractors
1793	GLASS AND GLAZING WORK	17	Special Trade Contractors
1794	EXCAVATION WORK	17	Special Trade Contractors
1795	WRECKING AND DEMOLITION WORK	17	Special Trade Contractors
1796	INST OR ERECTION OF BLDG EQUIP	17	Special Trade Contractors
1799	SPECIAL TRADE CONTRACTORS, NEC	17	Special Trade Contractors
2048	PREP FEEDS & INGRED FOR ANIMA	20	Food & Kindred Products
2311	MEN'S & BOY'S SUITS, COATS	23	Apparel & Other Textile Products
2321	MEN'S, & BOY'S SHIRTS	23	Apparel & Other Textile Products
2323	MEN'S, YOUTH'S & BOYS NECKWEAR	23	Apparel & Other Textile Products
2325	MEN & BOY SEP TROUSERS & SLACK	23	Apparel & Other Textile Products
2326	MEN'S & BOY'S WORK CLOTHING	23	Apparel & Other Textile Products
2329	MEN'S, YOUTH'S & BOY'S CLOTHNG	23	Apparel & Other Textile Products
2331	WOMEN, MIS, JR' BLSES, WAISTS	23	Apparel & Other Textile Products

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
2335	WOMEN'S, MISSES' & JRS' DRESS	23	Apparel & Other Textile Products
2337	WOMEN, MIS', JRS' SUITS, SHIRT	23	Apparel & Other Textile Products
2339	WOMEN'S, MISS' & JR' OUTERWEAR	23	Apparel & Other Textile Products
2341	WOMENS,MIS',CHLD'S,INF UNDERWE	23	Apparel & Other Textile Products
2342	BRASSIERS,GIRDLES & ALLIED GAR	23	Apparel & Other Textile Products
2353	HATS, CAPS AND MILLINERY	23	Apparel & Other Textile Products
2361	GIRLS, CHILDS & INFS OUTERWEAR	23	Apparel & Other Textile Products
2369	GIRLS, CHILDS & INFS OUTERWEAR	23	Apparel & Other Textile Products
2371	FUR GOODS	23	Apparel & Other Textile Products
2381	DRESS & WK GLOVE EXC KNIT/LEAT	23	Apparel & Other Textile Products
2384	ROBES & DRESSING GOWNS	23	Apparel & Other Textile Products
2385	RAINCOATS & RAINGEAR	23	Apparel & Other Textile Products
2386	LEATHER & SHEEP-LINED CLOTHING	23	Apparel & Other Textile Products
2387	APPAREL BELTS	23	Apparel & Other Textile Products
2389	APPAREL & ACCESSORIES, NEC	23	Apparel & Other Textile Products
2391	CURTAINS & DRAPERIES	23	Apparel & Other Textile Products
2392	HOUSEFURNISHINGS, EXC CURTAINS	23	Apparel & Other Textile Products
2393	TEXTILE BAGS	23	Apparel & Other Textile Products
2394	CANVAS & RELATED PRODUCTS	23	Apparel & Other Textile Products
2395	PLEATING, DECOR/NOVELTY STITCH	23	Apparel & Other Textile Products
2397	SCHIFFLI MACHINE EMBROIDERIES	23	Apparel & Other Textile Products
2411	LOGGING CAMPS/LOGGING CONTRACT	24	Lumber & Wood Products
2426	HARDWOOD DIMEN & FLOORING MILL	24	Lumber & Wood Products
2429	SPECIAL PRODUCT SAWMILLS NEC	24	Lumber & Wood Products
2441	NAILED/LOCK CORNER WOOD BOXES	24	Lumber & Wood Products
2448	WOOD PALLETS AND SKIDS	24	Lumber & Wood Products

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
2449	WOOD CONTAINERS NEC	24	Lumber & Wood Products
2451	MOBILE HOMES	24	Lumber & Wood Products
2452	PREFAB WOOD BLDGS & COMPONENTS	24	Lumber & Wood Products
2515	MATTRESSES AND BEDSPRINGS	25	Furniture & Fixtures
2519	HOUSEHOLD FURNITURE, NEC	25	Furniture & Fixtures
2652	SET-UP PAPERBOARD BOXES	26	Paper & Allied Products
2673	BAGS, PLASTIC, LAMINA & COATED	26	Paper & Allied Products
2675	DIE-CUT PAPER,PAPERBRD/CARDBRD	26	Paper & Allied Products
2676	SANITARY PAPER PRODUCTS	26	Paper & Allied Products
2677	ENVELOPES	26	Paper & Allied Products
2678	STATIONERY, TABLETS & REL PROD	26	Paper & Allied Products
3131	BOOT & SHOE CUT STOCK & FINDNG	31	Leather & Leather Products
3142	HOUSE SLIPPERS	31	Leather & Leather Products
3143	MEN'S FOOTWEAR, EXCEPT ATHLETIC	31	Leather & Leather Products
3144	WOMEN'S FOOTWEAR, EXCEPT ATHLET	31	Leather & Leather Products
3149	FOOTWEAR, EXCEPT RUBBER NEC	31	Leather & Leather Products
3151	LEATHER GLOVES AND MITTENS	31	Leather & Leather Products
3161	LUGGAGE	31	Leather & Leather Products
3171	WOMEN'S HANDBAGS AND PURSES	31	Leather & Leather Products
3172	PERSONAL LEATHER GOODS, EXC HAN	31	Leather & Leather Products
3199	LEATHER GOODS NEC	31	Leather & Leather Products
3271	CONCRETE BLOCK & BRICK	32	Stone, Clay, & Glass Products
3281	CUT STONE & STONE PRODUCTS	32	Stone, Clay, & Glass Products
3942	DOLLS	39	Misc. Manuf. Industries
3952	LEAD PENCILS AND ART GOODS	39	Misc. Manuf. Industries
3955	CARBON PAPER AND INKED RIBBONS	39	Misc. Manuf. Industries

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
3991	BROOMS AND BRUSHES	39	Misc. Manuf. Industries
4111	LOCAL AND SUBURBAN TRANSIT	41	Local & Interurban Passenger Transit
4119	LOCAL PASSENGER TRANSPORTATION	41	Local & Interurban Passenger Transit
4121	TAXICABS	41	Local & Interurban Passenger Transit
4131	INTERCITY & RURAL BUS TRANSPOR	41	Local & Interurban Passenger Transit
4141	LOCAL BUS CHARTER SERVICE	41	Local & Interurban Passenger Transit
4142	BUS CHARTER SERVICE, EXC LOCAL	41	Local & Interurban Passenger Transit
4151	SCHOOL BUSES	41	Local & Interurban Passenger Transit
4173	BUS TERMINAL & SERVICE FACILIT	41	Local & Interurban Passenger Transit
4212	LOCAL TRUCKING WITHOUT STORAGE	42	Trucking & Warehousing
4213	TRUCKING, EXCEPT LOCAL	42	Trucking & Warehousing
4214	LOCAL TRUCKING WITH STORAGE	42	Trucking & Warehousing
4215	COURIER SERVICES, EXCEPT AIR	42	Trucking & Warehousing
4221	FARM PROD WAREHOUSING & STORAG	42	Trucking & Warehousing
4222	REFRIGERTAED WAREHOUSING & STO	42	Trucking & Warehousing
4225	GENERAL WAREHOUSING & STORAGE	42	Trucking & Warehousing
4226	SPECIAL WAREHOUSING & STORAGE	42	Trucking & Warehousing
4231	TRUCKING TERMINAL FACILITIES	42	Trucking & Warehousing
4311	UNITED STATES POSTAL SERVICE	43	U.S. Postal Service
4412	DEEP SEA FOREIGN TRANSP OF FRE	44	Water Transportation
4424	DEEP SEA DOMES TRANSP OF FREIG	44	Water Transportation
4432	FREIGHT TRANSP ON THE GR LAKES	44	Water Transportation
4449	WATER TRANSP OF FREIGHT, NEC	44	Water Transportation
4481	DEEP SEA PAS TRANSP, EXC FERRY	44	Water Transportation
4482	FERRIES	44	Water Transportation
4489	WATER PASSENGER TRANSPORTATION	44	Water Transportation

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
4492	TOWING AND TUGBOAT SERVICE	44	Water Transportation
4493	MARINAS	44	Water Transportation
4512	AIR TRANSPORTATION, SCHEDULED	45	Transportation by Air
4513	AIR COURIER SERVICES	45	Transportation by Air
4522	AIR TRANSP, NONSCHEDULED	45	Transportation by Air
4613	REFINED PETROLEUM PIPELINE	46	Pipelines, Except Natural Gas
4619	PIPELINES, NEC	46	Pipelines, Except Natural Gas
4724	TRAVEL AGENCIES	47	Transportation Services
4725	TOUR OPERATORS	47	Transportation Services
4729	PASSENGER TRANSP ARRANGEMENT	47	Transportation Services
4731	FREIGHT TRANSP ARRANGEMENT	47	Transportation Services
4783	PACKING AND CRATING	47	Transportation Services
4785	INSPECTION & FIXED FACILITIE	47	Transportation Services
4789	TRANSPORTATION SERVICES, NEC	47	Transportation Services
4812	RADIOTELEPHONE COMMUNICATIONS	48	Communications
4813	TELEPHONE COM, EXCEPT RADIO	48	Communications
4822	TELEGRAPH & OTHER COMMUNICATI	48	Communications
4832	RADIO BROADCASTING, NEC	48	Communications
4833	TELEVISION BROADCASTING	48	Communications
4841	CABLE & OTHER PAY TV SERVICES	48	Communications
4899	COMMUNICATION SERVICES, NEC	48	Communications
4922	NATURAL GAS TRANSMISSION	49	Electric, Gas, & Sanitary Services
4923	NAT GAS TRANSMISSION & DISTRIB	49	Electric, Gas, & Sanitary Services
4924	NATURAL GAS DISTRIBUTION	49	Electric, Gas, & Sanitary Services
4932	GAS & OTHER SERVICES COMBINED	49	Electric, Gas, & Sanitary Services
4952	SEWERAGE SYSTEMS	4952	Sewerage Systems

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
4959	SANITARY SERVICES, NEC	4959	Sanitary Services
4971	IRRIGATION SYSTEMS	49	Electric, Gas, & Sanitary Services
5012	AUTOMOBILES AND OTHER VEHICLES	50	Wholesale Trade- Durable Goods
5013	MOTOR VEHICLE PARTS & NEW SUP	50	Wholesale Trade- Durable Goods
5014	TIRES AND TUBES	50	Wholesale Trade- Durable Goods
5015	MOTOR VEHICLE PARTS, USED	50	Wholesale Trade- Durable Goods
5021	FURNITURE	50	Wholesale Trade- Durable Goods
5023	HOMEFURNISHINGS	50	Wholesale Trade- Durable Goods
5031	LUMBER,PLYWOOD,MILLWORK,& PANL	50	Wholesale Trade- Durable Goods
5033	ROOFING, SIDING AND INSULATION	50	Wholesale Trade- Durable Goods
5039	CONSTRUCTION MATERIALS, NEC	50	Wholesale Trade- Durable Goods
5043	PHOTOGRAPHIC EQUIP & SUPPLIES	50	Wholesale Trade- Durable Goods
5044	OFFICE EQUIPMENT	50	Wholesale Trade- Durable Goods
5045	COMPUTERS, PERIPHERALS, & SOFT	50	Wholesale Trade- Durable Goods
5046	COMMERCIAL EQUIPMENT, NEC	50	Wholesale Trade- Durable Goods
5047	MEDICAL AND OFFICE EQUIPMENT	50	Wholesale Trade- Durable Goods
5048	OPHTHALMIC GOODS	50	Wholesale Trade- Durable Goods
5049	PROFESSIONAL EQUIPMENT, NEC	50	Wholesale Trade- Durable Goods
5051	METAL SERVICE CENTERS & OFFICE	50	Wholesale Trade- Durable Goods
5052	COAL & OTHER MINERALS & ORES	50	Wholesale Trade- Durable Goods
5063	ELECTRICAL APPARATUS AND EQUIP	50	Wholesale Trade- Durable Goods
5064	ELEC APPLIANCES/TV & RADIO SET	50	Wholesale Trade- Durable Goods
5065	ELECTRONIC PARTS AND EQUIPMENT	50	Wholesale Trade- Durable Goods
5072	HARDWARE	50	Wholesale Trade- Durable Goods
5074	PLUMB & HEAT EQUIP & SUPPLIES	50	Wholesale Trade- Durable Goods
5075	AIR HEAT & AIR-COND. EQUIP/SUP	50	Wholesale Trade- Durable Goods

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
5078	REFRIGERATION EQUIP & SUPPLIES	50	Wholesale Trade- Durable Goods
5082	CONST & MINING MACHINE & EQUIP	50	Wholesale Trade- Durable Goods
5083	FARM & GARDEN MACHINE & EQUIP	50	Wholesale Trade- Durable Goods
5084	INDUSTRIAL MACHINERY AND EQUIP	50	Wholesale Trade- Durable Goods
5085	INDUSTRIAL SUPPLIES	50	Wholesale Trade- Durable Goods
5087	SERVICE ESTABLISH EQUIP & SUPP	50	Wholesale Trade- Durable Goods
5088	TRANS EQUIP & SUPP, EXC MOTOR	50	Wholesale Trade- Durable Goods
5091	SPORTING & RECREATIONAL GOODS	50	Wholesale Trade- Durable Goods
5092	TOYS & HOBBY GOODS & SUPPLIES	50	Wholesale Trade- Durable Goods
5093	SCRAP & WASTE MATERIALS	50	Wholesale Trade- Durable Goods
5094	JEWELRY, WATCHES, PRECIOUS STO	50	Wholesale Trade- Durable Goods
5099	DURABLE GOODS, NEC	50	Wholesale Trade- Durable Goods
5111	PRINTING AND WRITING PAPER	51	Wholesale Trade- Nondurable Goods
5112	STATIONERY AND OFFICE SUPPLIES	51	Wholesale Trade- Nondurable Goods
5113	INDUST & PERSONAL PAPER SERVIC	51	Wholesale Trade- Nondurable Goods
5122	DRUGS, DRUG PRPPRIE & SUNDRIES	51	Wholesale Trade- Nondurable Goods
5131	PIECE GOODS AND NOTIONS	51	Wholesale Trade- Nondurable Goods
5136	MALE'S CLOTHING & FURNISHINGS	51	Wholesale Trade- Nondurable Goods
5137	WOMEN'S, CHILD & INF CLOTHING	51	Wholesale Trade- Nondurable Goods
5139	FOOTWEAR	51	Wholesale Trade- Nondurable Goods
5141	GROCERIES, GENERAL LINE	51	Wholesale Trade- Nondurable Goods
5142	PACKAGED FROZEN FOODS	51	Wholesale Trade- Nondurable Goods
5143	DAIRY PROD, EXC DRIED & CANNED	51	Wholesale Trade- Nondurable Goods
5145	CONFECTIONERY	51	Wholesale Trade- Nondurable Goods
5146	FISH AND SEAFOODS	51	Wholesale Trade- Nondurable Goods
5147	MEATS AND MEAT PRODUCTS	51	Wholesale Trade- Nondurable Goods



**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
5148	FRESH FRUITS AND VEGETABLES	51	Wholesale Trade- Nondurable Goods
5149	GROCERIES & RELATED PRODUCTS	51	Wholesale Trade- Nondurable Goods
5153	GRAIN AND FIELD BEANS	51	Wholesale Trade- Nondurable Goods
5154	LIVESTOCK	51	Wholesale Trade- Nondurable Goods
5162	PLASTIC MATER & BASIC SHAPES	51	Wholesale Trade- Nondurable Goods
5172	PETROL & PET PROD WHOLESALERS	51	Wholesale Trade- Nondurable Goods
5181	BEER AND ALE	51	Wholesale Trade- Nondurable Goods
5191	FARM SUPPLIES	51	Wholesale Trade- Nondurable Goods
5192	BOOKS, PERIODICALS & NEWSPAPER	51	Wholesale Trade- Nondurable Goods
5193	FLOWERS AND FLORISTS' SUPPLIES	51	Wholesale Trade- Nondurable Goods
5194	TOBACCO AND TOBACCO PRODUCTS	51	Wholesale Trade- Nondurable Goods
5198	PAINTS, VARNISHES AND SUPPLIES	51	Wholesale Trade- Nondurable Goods
5199	NONDURABLE GOODS, NEC	51	Wholesale Trade- Nondurable Goods
5211	LUMBER & BUILD MATERIAL DEALER	52	Building Materials& Gardening Supplies
5231	PAINT, GLASS & WALLPAPER STORE	52	Building Materials& Gardening Supplies
5251	HARDWARE STORES	52	Building Materials& Gardening Supplies
5261	RET NURSERIES,LAWN/GARDN STORE	52	Building Materials& Gardening Supplies
5271	MOBILE HOME DEALERS	52	Building Materials& Gardening Supplies
5311	DEPARTMENT STORES	53	General Merchandise Stores
5331	VARIETY STORES	53	General Merchandise Stores
5399	MISCELLANEOUS GENERAL STORES	53	General Merchandise Stores
5411	GROCERY STORES	54	Food Stores
5421	MEAT AND FISH MARKETS	54	Food Stores
5431	FRUIT AND VEGETABLE MARKETS	54	Food Stores
5441	CANDY, NUT & CONFECTION STORES	54	Food Stores
5451	DAIRY PRODUCTS STORES	54	Food Stores

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
5461	RETAIL BAKERIES	54	Food Stores
5499	MISCELLANEOUS FOOD STORES	54	Food Stores
5511	MOTOR VEH. DEALERS (NEW/USED)	55	Automotive Dealers & Service Stations
5521	MOTOR VEH. DEALERS (USED ONLY)	55	Automotive Dealers & Service Stations
5531	AUTO AND HOME SUPPLY STORES	55	Automotive Dealers & Service Stations
5541	GASOLINE SERVICE STATIONS	55	Automotive Dealers & Service Stations
5551	BOAT DEALERS	55	Automotive Dealers & Service Stations
5561	RECREATIONAL VEHICLE DEALERS	55	Automotive Dealers & Service Stations
5571	MOTORCYCLE DEALERS	55	Automotive Dealers & Service Stations
5599	AUTOMOTIVE DEALERS, NEC	55	Automotive Dealers & Service Stations
5611	MALE'S CLOTHING & ACCESS STORE	56	Apparel & Accessory Stores
5621	WOMEN'S CLOTHING STORES	56	Apparel & Accessory Stores
5632	WOMEN'S ACCESS & SPEC STORES	56	Apparel & Accessory Stores
5641	CHILDREN'S & INF WEAR STORES	56	Apparel & Accessory Stores
5651	FAMILY CLOTHING STORES	56	Apparel & Accessory Stores
5661	SHOE STORES	56	Apparel & Accessory Stores
5699	MISC APPAREL & ACCESS STORES	56	Apparel & Accessory Stores
5712	FURNITURE STORES	57	Furniture & Homefurnishings Stores
5713	FLOOR COVERING STORES	57	Furniture & Homefurnishings Stores
5714	DRAPE, CURTAIN & UPHOL STORES	57	Furniture & Homefurnishings Stores
5719	MISC HOMEFURNISHINGS STORES	57	Furniture & Homefurnishings Stores
5722	HOUSEHOLD APPLIANCE STORES	57	Furniture & Homefurnishings Stores
5731	RADIO, TV & ELECTRONICS STORES	57	Furniture & Homefurnishings Stores
5734	COMPUTER AND SOFTWARE STORES	57	Furniture & Homefurnishings Stores
5735	RECORD & PRERECORDED TAPE STOR	57	Furniture & Homefurnishings Stores
5736	MUSICAL INSTRUMENT STORES	57	Furniture & Homefurnishings Stores

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
5813	DRINKING PLACES (ALCOHOLIC BEV	58	Eating & Drinking Places
5912	DRUG STORES & PROPRIETARY STOR	59	Miscellaneous Retail
5921	LIQUOR STORES	59	Miscellaneous Retail
5932	USED MERCHANDISE STORES	59	Miscellaneous Retail
5941	SPORTING GOODS/BICYCLE STORES	59	Miscellaneous Retail
5942	BOOK STORES	59	Miscellaneous Retail
5943	STATIONERY STORES	59	Miscellaneous Retail
5944	JEWELRY STORES	59	Miscellaneous Retail
5945	HOBBY, TOY AND GAME SHOPS	59	Miscellaneous Retail
5946	CAMERA & PHOTO SUPPLY STORES	59	Miscellaneous Retail
5947	GIFT, NOVELTY & SOUVENIR SHOPS	59	Miscellaneous Retail
5948	LUGGAGE & LEATHER GOODS STORES	59	Miscellaneous Retail
5949	SEW/NEEDLEWK/PIECE GOODS STORE	59	Miscellaneous Retail
5961	CATALOG AND MAIL-ORDER HOUSES	59	Miscellaneous Retail
5962	AUTO MERCHANDIS MACHINE OPERAT	59	Miscellaneous Retail
5963	DIRECT SELLING ESTABLISHMENTS	59	Miscellaneous Retail
5983	FUEL OIL DEALERS	59	Miscellaneous Retail
5984	LIQ PETROL GAS (BOT GAS) DEALR	59	Miscellaneous Retail
5989	FUEL DEALERS, NEC	59	Miscellaneous Retail
5992	FLORISTS	59	Miscellaneous Retail
5993	TOBACCO STORES AND STANDS	59	Miscellaneous Retail
5994	NEWS DEALERS AND NEWSSTANDS	59	Miscellaneous Retail
5995	OPTICAL GOODS STORES	59	Miscellaneous Retail
5999	MISCELLANEOUS RETAIL STORES	59	Miscellaneous Retail
6011	FEDERAL RESERVE BANKS	60	Depository Institutions
6019	CENTRAL RESERVE REPOSITORY	60	Depository Institutions

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
6021	NATIONAL COMMERCIAL BANKS	60	Depository Institutions
6022	STATE COMMERCIAL BANKS	60	Depository Institutions
6029	COMMERCIAL BANKS, NEC	60	Depository Institutions
6035	FEDERAL SAVINGS INSTITUTIONS	60	Depository Institutions
6036	SAVINGS INSTITUTIONS, EXC FED	60	Depository Institutions
6061	FEDERAL CREDIT UNIONS	60	Depository Institutions
6062	STATE CREDIT UNIONS	60	Depository Institutions
6081	FOREIGN BANK & BRANCHES & AGEN	60	Depository Institutions
6082	FOREIGN TRADE & INTERNAT BANKS	60	Depository Institutions
6091	NONDEPOSIT TRUST FACILTIES	60	Depository Institutions
6099	FUNCT RELATED TO DEP BANKING	60	Depository Institutions
6111	FEDERAL & FED-SPONSORED CREDIT	61	Nondepository Institutions
6141	PERSONAL CREDIT INSTITUTIONS	61	Nondepository Institutions
6153	SHORT-TERM BUS. CREDIT INSTITU	61	Nondepository Institutions
6159	MISC BUSINESS CREDIT INSTITUTI	61	Nondepository Institutions
6162	MORTG BANKERS & LOAN CORRESPON	61	Nondepository Institutions
6163	LOAN BROKERS	61	Nondepository Institutions
6211	SEC BROKERS/DEALERS/FLOTAT. CO	62	Security & Commodity Brokers
6221	COMMODITY CONTR BROKERS & DEAL	62	Security & Commodity Brokers
6231	SECURITY & COMMODITY EXCHANGES	62	Security & Commodity Brokers
6282	INVESTMENT ADVICE	62	Security & Commodity Brokers
6289	SECURITY & COMMODITY SERVICES	62	Security & Commodity Brokers
6311	LIFE INSURANCE	63	Insurance Carriers
6321	ACCIDENT AND HEALTH INSURANCE	63	Insurance Carriers
6324	HOSPITAL & MEDICAL SERV PLANS	63	Insurance Carriers
6331	FIRE, MARINE & CASUALTY INSUR	63	Insurance Carriers

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
6351	SURETY INSURANCE	63	Insurance Carriers
6361	TITLE INSURANCE	63	Insurance Carriers
6371	PENSION, HEALTH & WELFARE FUND	63	Insurance Carriers
6399	INSURANCE CARRIERS, NEC	63	Insurance Carriers
6411	INSUR AGENTS, BROKERS, & SERVI	64	Insurance Agents, Brokers, & Service
6512	OPER OF NONRESIDENTIAL BLDGS	65	Real Estate
6513	OPERATORS OF APART BUILDINGS	65	Real Estate
6514	OPER OF DWELL OTHER THAN APART	65	Real Estate
6515	OPER OF RES MOBILE HOME SITES	65	Real Estate
6517	LESSORS OF RAILROAD PROPERTIES	65	Real Estate
6519	LESSORS OF REAL PROPERTY, NEC	65	Real Estate
6531	REAL ESTATE AGENTS & MANAGERS	65	Real Estate
6541	TITLE ABSTRACT OFFICES	65	Real Estate
6552	LAND SUBDIVIDERS & DEV, EX CEM	65	Real Estate
6553	CEMETERY SUBDIVIDERS & DEVELOP	65	Real Estate
6712	BANK HOLDING COMPANIES	67	Holding & Other Investment Offices
6719	HOLDING COMPANIES, NEC	67	Holding & Other Investment Offices
6722	MGMT INVEST. OFFICES, OPEN END	67	Holding & Other Investment Offices
6726	INVESTMENT OFFICES, NEC	67	Holding & Other Investment Offices
6732	EDUCAT.,RELIG & CHARITY TRUSTS	67	Holding & Other Investment Offices
6733	TRUSTS,EXC EDUCAT,RELIG & CHAR	67	Holding & Other Investment Offices
6792	OIL ROYALTY TRADERS	67	Holding & Other Investment Offices
6794	PATENT OWNERS AND LESSORS	67	Holding & Other Investment Offices
6798	REAL ESTATE INVESTMENT TRUSTS	67	Holding & Other Investment Offices
6799	INVESTORS, NEC	67	Holding & Other Investment Offices
7011	HOTELS AND MOTELS	70	Hotels & Other Lodging Places

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
7021	ROOMING AND BOARDING HOUSES	70	Hotels & Other Lodging Places
7032	SPORTING & RECREATIONAL CAMPS	70	Hotels & Other Lodging Places
7033	REC VEHICLE PARKS & CAMPSITES	70	Hotels & Other Lodging Places
7041	ORG. HOTEL & LODG HSE, ON MEMB	70	Hotels & Other Lodging Places
7211	POWER LAUNDRIES, RES & COMMERC	72	Personal Services- SIC 72
7212	GARM PRESSING/LAUNDRIES/DRYCLE	72	Personal Services- SIC 72
7213	LINEN SUPPLY	72	Personal Services- SIC 72
7215	COIN-OPERATED LAUNDRIES/DRYCLE	72	Personal Services- SIC 72
7216	DRYCLEAN PLANTS, EXC RUG CLEAN	72	Personal Services- SIC 72
7217	CARPET & UPHOLSTERY CLEANING	72	Personal Services- SIC 72
7219	LAUNDRY & GARMENT SERVICES, NEC	72	Personal Services- SIC 72
7231	BEAUTY SHOPS	72	Personal Services- SIC 72
7241	BARBER SHOPS	72	Personal Services- SIC 72
7251	SHOE REP SHOPS & SHOESHINE PAR	72	Personal Services- SIC 72
7261	FUNERAL SERVICES & CREMATORIES	72	Personal Services- SIC 72
7291	TAX AND PREPARATION SERVICES	72	Personal Services- SIC 72
7299	MISCELLANEOUS PERSONAL SERVICE	72	Personal Services- SIC 72
7311	ADVERTISING AGENCIES	73	Business Services
7312	OUTDOOR ADVERTISING AGENCIES	73	Business Services
7313	RADIO, TV & PUBLISHERS AD REPS	73	Business Services
7319	ADVERTISING, NEC	73	Business Services
7322	ADJUSTMENT & COLLECT SERVICES	73	Business Services
7323	CREDIT REPORTING SERVICES	73	Business Services
7331	DIRECT MAIL ADVERTIS SERVICES	73	Business Services
7334	PHOTOCOPYING/DUPLICATING SERV	73	Business Services
7338	SECRETARIAL & COURT REPORTING	73	Business Services

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
7342	DISINFECTING & EXTERMINAT SERV	73	Business Services
7349	BUILDING MAINTNENANCE SERVICE	73	Business Services
7352	MEDICAL EQUIPMENT RENTAL	73	Business Services
7353	HEAVY CONSTRUCTON EQUIP RENTAL	73	Business Services
7359	EQUIPMENT RENTAL AND LEASING,	73	Business Services
7361	EMPLOYMENT AGENCIES	73	Business Services
7363	HELP SUPPLY SERVICES	73	Business Services
7371	CUSTOM COMPUTER PROG SERVICES	73	Business Services
7372	PREPACKAGED SOFTWARE	73	Business Services
7373	COMPUTER INTEGRATED SYS DESIGN	73	Business Services
7374	DATA PROCESSING & PREPARATION	73	Business Services
7375	INFORMATION RETRIEVAL SERVICES	73	Business Services
7376	COMPUTER FACILITIES MANAGEMENT	73	Business Services
7377	COMPUTER RENTAL AND LEASING	73	Business Services
7378	COMPUTER MAINTENANCE & REPAIR	73	Business Services
7379	COMPUTER RELATED SERVICES, NEC	73	Business Services
7381	DETECTIVE & ARMORED CAR SERVIC	73	Business Services
7382	SECURITY SYSTEMS SERVICES	73	Business Services
7383	NEWS SYNDICATES	73	Business Services
7389	BUSINESS SERVICES, NEC	73	Business Services
7513	TRUCK RENT & LEASE, NO DRIVERS	75	Auto Repair, Services, & Parking
7514	PASSENGER CAR RENTAL	75	Auto Repair, Services, & Parking
7515	PASSENGER CAR LEASING	75	Auto Repair, Services, & Parking
7519	UTILITY TRAILER & RV RENTAL	75	Auto Repair, Services, & Parking
7521	AUTOMOBILE PARKING	75	Auto Repair, Services, & Parking
7532	TOP & BODY REPAIR & PAINT SHOP	75	Auto Repair, Services, & Parking

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
7533	AUTO EXHAUST SYSTEM REP SHOPS	75	Auto Repair, Services, & Parking
7534	TIRE RETREADING & REPAIR SHOPS	75	Auto Repair, Services, & Parking
7536	AUTO GLASS REPLACEMENT SHOPS	75	Auto Repair, Services, & Parking
7537	AUTO TRANSMISSION REPAIR SHOPS	75	Auto Repair, Services, & Parking
7538	GENERAL AUTO REPAIR SHOPS	75	Auto Repair, Services, & Parking
7539	AUTOMOTIVE REPAIR SHOPS, NEC	75	Auto Repair, Services, & Parking
7542	CAR WASHES	75	Auto Repair, Services, & Parking
7549	AUTO SERV, EXC REP & CARWASHES	75	Auto Repair, Services, & Parking
7622	RADIO & TELEVISION REPAIR SHOP	76	Miscellaneous Repair Services
7623	REFRIG & AC SERV & REP SHOPS	76	Miscellaneous Repair Services
7629	ELEC & ELECTRONIC REPAIR SHOPS	76	Miscellaneous Repair Services
7631	WATCH, CLOCK & JEWELRY REPAIR	76	Miscellaneous Repair Services
7641	REUPHOLSTERY & FURNITURE REP	76	Miscellaneous Repair Services
7694	ARMATURE REWINDING SHOPS	76	Miscellaneous Repair Services
7812	MOTION PICTURE & VIDEO PROD	78	Motion Pictures
7819	SERV. ALLIED TO MOTION PICTURE	78	Motion Pictures
7822	MOTION PICTURE & TAPE DISTRIB	78	Motion Pictures
7829	SERV ALLIED TO MOTION PIC DIST	78	Motion Pictures
7832	MOTION PIC THEA., EX DRIVE-IN	78	Motion Pictures
7833	DRIVE-IN MOTION PIC THEATRES	78	Motion Pictures
7841	VIDEO TAPE RENTAL	78	Motion Pictures
7911	DANCE STUDIOS, SCHOOLS & HALLS	79	Amusement & Recreation Services
7922	THEA. PROD (EXC MOTION PICTURE	79	Amusement & Recreation Services
7929	BANDS, ORCH, ACTORS & ENTERTAI	79	Amusement & Recreation Services
7933	BOWLING CENTERS	79	Amusement & Recreation Services
7941	PROF SPORTS CLUBS & PROMOTERS	79	Amusement & Recreation Services



**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
7948	RACING, INCLUDING TRACK OPERA	79	Amusement & Recreation Services
7991	PHYSICAL FITNESS FACILITIES	79	Amusement & Recreation Services
7992	PUBLIC GOLF COURSES	79	Amusement & Recreation Services
7993	COIN OPERATED AMUSEMENT DEVI	79	Amusement & Recreation Services
7996	AMUSEMENT PARKS	79	Amusement & Recreation Services
7997	MEMBERSHIP SPORTS & REC CLUBS	79	Amusement & Recreation Services
7999	AMUSEMENT AND RECREATION, NEC	79	Amusement & Recreation Services
8111	LEGAL SERVICES	81	Legal Services
8211	ELEMENTARY & SECONDARY SCHOOLS	82	Educational Services
8221	COLLEGES, UNIV & PROF SCHOOLS	82	Educational Services
8222	JUNIOR COLLEGES & TECH INSTITU	82	Educational Services
8231	LIBRARIES	82	Educational Services
8243	DATA PROCESSING SCHOOLS	82	Educational Services
8244	BUSINESS & SECRETARIAL SCHOOLS	82	Educational Services
8249	VOCATIONAL SCHOOLS, NEC	82	Educational Services
8299	SCHOOLS & EDUCATIONAL SERVICES	82	Educational Services
8322	INDIVIDUAL AND FAMILY SERVICES	83	Social Services
8331	JOB TRAINING & VOC REHAB SERVI	83	Social Services
8351	CHILD DAY CARE SERVICES	83	Social Services
8361	RESIDENTIAL CARE	83	Social Services
8399	SOCIAL SERVICES, NEC	83	Social Services
8412	MUSEUMS AND ART GALLERIES	84	Museums, Botanical, Zoological Gardens
8422	BOTANICAL & ZOOLOGICAL GARDENS	84	Museums, Botanical, Zoological Gardens
8611	BUSINESS ASSOCIATIONS	86	Membership Organizations
8621	PROFESSIONAL MEMBERSHIP ORGAN	86	Membership Organizations
8631	LABOR UNIONS & LABOR ORGANIZA	86	Membership Organizations

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
8641	CIVIC, SOCIAL & FRATERNAL ASS.	86	Membership Organizations
8651	POLITICAL ORGANIZATIONS	86	Membership Organizations
8661	RELIGIOUS ORGANIZATIONS	86	Membership Organizations
8699	MEMBERSHIP ORGANIZATIONS, NEC	86	Membership Organizations
8711	ENGINEERING SERVICES	87	Engineering & Management Services
8712	ARCHITECTURAL SERVICES	87	Engineering & Management Services
8713	SURVEYING SERVICES	87	Engineering & Management Services
8721	ACC., AUDITING & BOOKKEEPING	87	Engineering & Management Services
8732	COMMERCIAL NONPHYSICAL RESEAR	87	Engineering & Management Services
8733	NONCOMMERCIAL RESEARCH ORGANI	87	Engineering & Management Services
8741	MANAGEMENT SERVICES	87	Engineering & Management Services
8742	MANAGEMENT CONSULTING SERVICE	87	Engineering & Management Services
8743	PUBLIC RELATIONS SERVICES	87	Engineering & Management Services
8744	FACILITIES SUPPORT SERVICES	87	Engineering & Management Services
8748	BUSINESS CONSULTING, NEC	87	Engineering & Management Services
8811	PRIVATE HOUSEHOLDS	88	Private Households
8999	SERVICES, NEC	89	Services, Not Elsewhere Classified
9111	EXECUTIVE OFFICES	91	Executive, Legislative, & General
9121	LEGISLATIVE BODIES	91	Executive, Legislative, & General
9131	EXEC & LEGIS OFFICES COMBINED	91	Executive, Legislative, & General
9199	GENERAL GOVERNMENT, NEC	91	Executive, Legislative, & General
9211	COURTS	92	Justice, Public Order, & Safety
9221	POLICE PROTECTION	92	Justice, Public Order, & Safety
9222	LEGAL COUNSEL & PROSECUTION	92	Justice, Public Order, & Safety
9223	CORRECTIONAL INSTITUTIONS	92	Justice, Public Order, & Safety
9224	FIRE PROTECTION	92	Justice, Public Order, & Safety

**Table C-2. SIC Codes Not Assigned to a Point Source Category**

<b>4-Digit SIC Code</b>	<b>SIC Description</b>	<b>Major SIC Group</b>	<b>SIC Group Description</b>
9229	PUBLIC ORDER AND SAFETY, NEC	92	Justice, Public Order, & Safety
9311	PUBLIC FINANCE	93	Finance, Taxation, & Monetary Policy
9411	ADMINISTRATION OF EDUCAT PROG	94	Administration of Human Resources
9431	ADMIN OF PUB HEALTH PROGRAMS	94	Administration of Human Resources
9441	ADM OF SOCIAL/HUMAN RESOURCE	94	Administration of Human Resources
9451	ADM OF VET AFFAIRS, EX HEA/INS	94	Administration of Human Resources
9511	AIR & WATER RES & SOL WSTE MGT	95	Environmental Quality & Housing
9512	LAND, MIN, WILDLIFE/FOREST CON	95	Environmental Quality & Housing
9531	ADMIN OF HOUSING PROGRAMS	95	Environmental Quality & Housing
9532	ADM OF URB PLAN/COMM/RURL DEV	95	Environmental Quality & Housing
9611	ADMIN OF GENERAL ECONOMIC PRO	96	Administration of Economic Programs
9621	REG & ADMIN OF TRANS PROGRAMS	96	Administration of Economic Programs
9631	REG & ADM OF COMMS, ELEC, GAS	96	Administration of Economic Programs
9641	REG OF AGRI MARKETING & COMMOD	96	Administration of Economic Programs
9651	REG, LIC & INSP OF COMM SECTOR	96	Administration of Economic Programs
9661	SPACE RESEARCH AND TECHNOLOGY	96	Administration of Economic Programs
9711	NATIONAL SECURITY	97	National Security & International Affairs
9721	INTERNATIONAL SECURITY	97	National Security & International Affairs
9999	NONCLASSIFIABLE ESTABLISHMENTS	99	Non classifiable Establishments

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
CWT	Centralized Waste Treatment	PSC	437	Centralized Waste Treatment
LNDFLL	Landfills	PSC	445	Landfills
MPM	Metal Products And Machinery	PSC	438	Metal Products And Machinery
VCCA	Vinyl Chloride and Chlor-Alkali	PNS	414.1	Chlorine And Chlorinated Hydrocarbons
VCCAP	Vinyl Chloride and Chloryl-Alkali (Pesticides)	PSC	455	Pesticide Chemicals
WC	Waste Combustors	PSC	444	Waste Combustors
325510ELEC	Paint and Coating Manufacturing (Electroplating)	PSC	413	Electroplating
326199ELEC	All Other Plastics Product Manufacturing (Electroplating)	PSC	413	Electroplating
331221ELEC	Rolled Steel Shape Manufacturing (Electroplating)	PSC	413	Electroplating
336340ELEC	Motor Vehicle Brake System Manufacturing (Electroplating)	PSC	413	Electroplating
111110	Soybean Farming	NAICS	1	Agricultural Production - Crops
111331	Apple Orchards	NAICS	1	Agricultural Production - Crops
111339	Other Noncitrus Fruit Farming	NAICS	1	Agricultural Production - Crops
111411	Mushroom Production	NAICS	1	Agricultural Production - Crops
111419	Other Food Crops Grown Under Cover	NAICS	1	Agricultural Production - Crops
111421	Nursery and Tree Production	NAICS	1	Agricultural Production - Crops
111422	Floriculture Production	NAICS	1	Agricultural Production - Crops
111930	Sugarcane Farming	NAICS	1	Agricultural Production - Crops
111991	Sugar Beet Farming	NAICS	1	Agricultural Production - Crops
111998	All Other Miscellaneous Crop Farming	PNC	NA	Miscellaneous Foods And Beverages
112112	Cattle Feedlots	PSC	412	CAFO
112120	Dairy Cattle and Milk Production	PSC	405	Dairy products processing
112210	Hog and Pig Farming	PSC	412	CAFO
112310	Chicken Egg Production	PSC	412	CAFO
112320	Broilers and Other Meat Type Chicken Production	PSC	432	Meat and Poultry Products
112330	Turkey Production	PSC	412	CAFO
112340	Poultry Hatcheries	PSC	412	CAFO
112390	Other Poultry Production	PSC	412	CAFO

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
112511	Finfish Farming and Fish Hatcheries	PSC	451	Concentrated Aquatic Animal Production
112512	Shellfish Farming	PSC	451	Concentrated Aquatic Animal Production
112910	Apiculture	NAICS	2	Agricultural Production - Livestock
113310	Logging	NAICS	24	Lumber & Wood Products
114111	Finfish Fishing	NAICS	9	Fishing, Hunting, & Trapping
114112	Shellfish Fishing	NAICS	9	Fishing, Hunting, & Trapping
115112	Soil Preparation, Planting, and Cultivating	NAICS	7	Agricultural Services
115114	Postharvest Crop Activities (except Cotton Ginning)	NAICS	7	Agricultural Services
115310	Support Activities for Forestry	NAICS	8	Forestry
211111	Crude Petroleum and Natural Gas Extraction	PSC	435	Oil & Gas Extraction
212111	Bituminous Coal and Lignite Surface Mining	PSC	434	Coal Mining
212112	Bituminous Coal Underground Mining	PSC	434	Coal Mining
212210	Iron Ore Mining	PSC	440	Ore Mining And Dressing
212221	Gold Ore Mining	PSC	440	Ore Mining And Dressing
212222	Silver Ore Mining	PSC	440	Ore Mining And Dressing
212231	Lead Ore and Zinc Ore Mining	PSC	440	Ore Mining And Dressing
212234	Copper Ore and Nickel Ore Mining	PSC	440	Ore Mining And Dressing
212291	Uranium-Radium-Vanadium Ore Mining	PSC	440	Ore Mining And Dressing
212299	All Other Metal Ore Mining	PSC	440	Ore Mining And Dressing
212311	Dimension Stone Mining and Quarrying	PSC	436	Mineral Mining And Processing
212312	Crushed and Broken Limestone Mining and Quarrying	PSC	436	Mineral Mining And Processing
212313	Crushed and Broken Granite Mining and Quarrying	PSC	436	Mineral Mining And Processing
212319	Other Crushed and Broken Stone Mining and Quarrying	PSC	436	Mineral Mining And Processing
212321	Construction Sand and Gravel Mining	PSC	436	Mineral Mining And Processing
212322	Industrial Sand Mining	PSC	436	Mineral Mining And Processing
212324	Kaolin and Ball Clay Mining	PSC	436	Mineral Mining And Processing
212325	Clay and Ceramic and Refractory Minerals Mining	PSC	436	Mineral Mining And Processing
212391	Potash, Soda, and Borate Mineral Mining	PSC	436	Mineral Mining And Processing
212392	Phosphate Rock Mining	PSC	436	Mineral Mining And Processing
212393	Other Chemical and Fertilizer Mineral Mining	PSC	436	Mineral Mining And Processing

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
212399	All Other Nonmetallic Mineral Mining	PSC	436	Mineral Mining And Processing
213112	Support Activities for Oil and Gas Operations	PSC	435	Oil & Gas Extraction
213113	Support Activities for Coal Mining	NAICS	12	Coal Mining
213115	Support Activities for Nonmetallic Minerals (except Fuels)	PSC	436	Mineral Mining And Processing
221111	Hydroelectric Power Generation	PSC	423	Steam Electric Power Generating
221112	Fossil Fuel Electric Power Generation	PSC	423	Steam Electric Power Generating
221113	Nuclear Electric Power Generation	PSC	423	Steam Electric Power Generating
221119	Other Electric Power Generation	PSC	423	Steam Electric Power Generating
221121	Electric Bulk Power Transmission and Control	PSC	423	Steam Electric Power Generating
221122	Electric Power Distribution	PSC	423	Steam Electric Power Generating
221310	Water Supply and Irrigation Systems	PNC	NA	Drinking Water Treatment
221320	Sewage Treatment Facilities	NAICS	NA	Sewerage Systems
221330	Steam and Air-Conditioning Supply	PSC	423	Steam Electric Power Generating
236117	New Housing Operative Builders	NAICS	15	General Building Contractors
237210	Land Subdivision	NAICS	65	Real Estate
238110	Poured Concrete Foundation and Structure Contractors	NAICS	17	Special Trade Contractors
238140	Masonry Contractors	NAICS	17	Special Trade Contractors
238150	Glass and Glazing Contractors	NAICS	17	Special Trade Contractors
238190	Other Foundation, Structure, and Building Exterior Contractors	NAICS	17	Special Trade Contractors
238210	Electrical Contractors and Other Wiring Installation Contractors	NAICS	17	Special Trade Contractors
238290	Other Building Equipment Contractors	NAICS	17	Special Trade Contractors
238320	Painting and Wall Covering Contractors	NAICS	17	Special Trade Contractors
238350	Finish Carpentry Contractors	NAICS	17	Special Trade Contractors
238390	Other Building Finishing Contractors	NAICS	17	Special Trade Contractors
238990	All Other Specialty Trade Contractors	NAICS	17	Special Trade Contractors
311111	Dog and Cat Food Manufacturing	PSC	406	Grain mills
311119	Other Animal Food Manufacturing	NAICS	20	Food & Kindred Products

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
311119GRAIN	All Other Specialty Trade Contractors (Grain mill)	PSC	406	Grain mills
311119MPP	Other Animal Food Manufacturing (Meat and Poultry Products)	PSC	432	Meat and Poultry Products
311119PH	Other Animal Food Manufacturing (Pharmaceutical Manufacturing)	PSC	439	Pharmaceutical Manufacturing
311119P	Other Animal Food Manufacturing (Pesticide Chemicals)	PSC	455	Pesticide Chemicals
311213	Malt Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311221	Wet Corn Milling	PSC	406	Grain mills
311222	Soybean Processing	PNC	NA	Miscellaneous Foods And Beverages
311223	Other Oilseed Processing	PNC	NA	Miscellaneous Foods And Beverages
311225	Fats and Oils Refining and Blending	PNC	NA	Miscellaneous Foods And Beverages
311225FER	Fats and Oils Refining and Blending (Fertilizer Manufacturing)	PSC	418	Fertilizer Manufacturing
311230	Breakfast Cereal Manufacturing	PSC	406	Grain mills
311311	Sugarcane Mills	PSC	409	Sugar Processing
311312	Cane Sugar Refining	PSC	409	Sugar Processing
311313	Beet Sugar Manufacturing	PSC	409	Sugar Processing
311320	Chocolate and Confectionery Manufacturing from Cacao Beans	PNC	NA	Miscellaneous Foods And Beverages
311330	Confectionery Manufacturing from Purchased Chocolate	PNC	NA	Miscellaneous Foods And Beverages
311340	Nonchocolate Confectionery Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311411	Frozen Fruit, Juice, and Vegetable Manufacturing	PSC	407	Canned And Preserved Fruits And Vegetables Processing
311412	Frozen Specialty Food Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311421	Fruit and Vegetable Canning	PSC	407	Canned And Preserved Fruits And Vegetables Processing
311422	Specialty Canning	PNC	NA	Miscellaneous Foods And Beverages
311423	Dried and Dehydrated Food Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311511	Fluid Milk Manufacturing	PSC	405	Dairy products processing

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
311512	Creamery Butter Manufacturing	PSC	405	Dairy products processing
311513	Cheese Manufacturing	PSC	405	Dairy products processing
311514	Dry, Condensed, and Evaporated Dairy Product Manufacturing	PSC	405	Dairy products processing
311520	Ice Cream and Frozen Dessert Manufacturing	PSC	405	Dairy products processing
311611	Animal (except Poultry) Slaughtering	PSC	432	Meat and Poultry Products
311612	Meat Processed from Carcasses	PSC	432	Meat and Poultry Products
311613	Rendering and Meat Byproduct Processing	PSC	432	Meat and Poultry Products
311615	Poultry Processing	PSC	432	Meat and Poultry Products
311712	Fresh and Frozen Seafood Processing	PSC	408	Canned And Preserved Seafood Processing
311811	Retail Bakeries	NAICS	54	Food Stores
311812	Commercial Bakeries	PNC	NA	Miscellaneous Foods And Beverages
311813	Frozen Cakes, Pies, and Other Pastries Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311821	Cookie and Cracker Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311822	Flour Mixes and Dough Manufacturing from Purchased Flour	PSC	406	Grain mills
311823	Dry Pasta Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311830	Tortilla Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311911	Roasted Nuts and Peanut Butter Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311919	Other Snack Food Manufacturing	PSC	407	Canned And Preserved Fruits And Vegetables Processing
311920	Coffee and Tea Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311930	Flavoring Syrup and Concentrate Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311941	Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing	PSC	407	Canned And Preserved Fruits And Vegetables Processing
311942	Spice and Extract Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311991	Perishable Prepared Food Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311999	All Other Miscellaneous Food Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
311999MPP	All Other Miscellaneous Food Manufacturing (Meat and Poultry Products)	PSC	432	Meat and Poultry Products



**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
311999DPP	All Other Miscellaneous Food Manufacturing (Miscellaneous Foods And Beverages)	PSC	405	Dairy products processing
311999GRAIN	All Other Miscellaneous Food Manufacturing (Grain Mills)	PSC	406	Grain mills
311999OCPSF	All Other Miscellaneous Food Manufacturing (Organic Chemicals, Plastics And Synthetic Fibers)	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
312111	Soft Drink Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
312112	Bottled Water Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
312113	Ice Manufacturing	PNC	NA	Miscellaneous Foods And Beverages
312120	Breweries	PNC	NA	Miscellaneous Foods And Beverages
312130	Wineries	PNC	NA	Miscellaneous Foods And Beverages
312140	Distilleries	PNC	NA	Miscellaneous Foods And Beverages
312210	Tobacco Stemming and Redrying	PNC	NA	Tobacco Products
312221	Cigarette Manufacturing	PNC	NA	Tobacco Products
312229	Other Tobacco Product Manufacturing	PNC	NA	Tobacco Products
313111	Yarn Spinning Mills	PSC	410	Textile Mills
313112	Yarn Texturizing, Throwing, and Twisting Mills	PSC	410	Textile Mills
313113	Thread Mills	PSC	410	Textile Mills
313210	Broadwoven Fabric Mills	PSC	410	Textile Mills
313221	Narrow Fabric Mills	PSC	410	Textile Mills
313230	Nonwoven Fabric Mills	PSC	410	Textile Mills
313241	Weft Knit Fabric Mills	PSC	410	Textile Mills
313249	Other Knit Fabric and Lace Mills	PSC	410	Textile Mills
313311	Broadwoven Fabric Finishing Mills	PSC	410	Textile Mills
313312	Textile and Fabric Finishing (except Broadwoven Fabric) Mills	PSC	410	Textile Mills
313320	Fabric Coating Mills	PSC	410	Textile Mills
314110	Carpet and Rug Mills	PSC	410	Textile Mills
314129	Other Household Textile Product Mills	NAICS	23	Apparel & Other Textile Products
314911	Textile Bag Mills	NAICS	23	Apparel & Other Textile Products
314992	Tire Cord and Tire Fabric Mills	PSC	410	Textile Mills

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
314999	All Other Miscellaneous Textile Product Mills	PSC	410	Textile Mills
315111	Sheer Hosiery Mills	PSC	410	Textile Mills
315119	Other Hosiery and Sock Mills	PSC	410	Textile Mills
315191	Outerwear Knitting Mills	PSC	410	Textile Mills
315192	Underwear and Nightwear Knitting Mills	PSC	410	Textile Mills
315221	Men's and Boys' Cut and Sew Underwear and Nightwear Manufacturing	PSC	410	Textile Mills
315223	Men's and Boys' Cut and Sew Shirt (except Work Shirt) Manufacturing	NAICS	23	Apparel & Other Textile Products
315231	Women's and Girls' Cut and Sew Lingerie, Loungewear, and Nightwear Manufacturing	NAICS	23	Apparel & Other Textile Products
315299	All Other Cut and Sew Apparel Manufacturing	PSC	428	Rubber Manufacturing
315992AP	Glove and Mitten Manufacturing (Apparel & Other Textile Products)	NAICS	23	Apparel & Other Textile Products
315992	Glove and Mitten Manufacturing	PSC	410	Textile Mills
315992RUB	Glove and Mitten Manufacturing (Rubber Manufacturing)	PSC	428	Rubber Manufacturing
315999	Other Apparel Accessories and Other Apparel Manufacturing	PSC	410	Textile Mills
316110	Leather and Hide Tanning and Finishing	PSC	425	Leather Tanning And Finishing
316211	Rubber and Plastics Footwear Manufacturing	PSC	428	Rubber Manufacturing
316213	Men's Footwear (except Athletic) Manufacturing	NAICS	31	Leather & Leather Products
316219	Other Footwear Manufacturing	NAICS	31	Leather & Leather Products
321113-1	Sawmills (Phase I)	PSC	430	Pulp, Paper And Paperboard
321113	Sawmills	PSC	429	Timber Products Processing
321114	Wood Preservation	PSC	429	Timber Products Processing
321211	Hardwood Veneer and Plywood Manufacturing	PSC	429	Timber Products Processing
321212	Softwood Veneer and Plywood Manufacturing	PSC	429	Timber Products Processing
321213	Engineered Wood Member (except Truss) Manufacturing	PSC	429	Timber Products Processing
321214	Truss Manufacturing	PSC	429	Timber Products Processing

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
321219	Reconstituted Wood Product Manufacturing	PSC	429	Timber Products Processing
321911	Wood Window and Door Manufacturing	PSC	429	Timber Products Processing
321991	Manufactured Home (Mobile Home) Manufacturing	NAICS	24	Lumber & Wood Products
321992	Prefabricated Wood Building Manufacturing	NAICS	24	Lumber & Wood Products
321999	All Other Miscellaneous Wood Product Manufacturing	PSC	429	Timber Products Processing
322110-3	Pulp Mills (Phase III)	PSC	430	Pulp, Paper And Paperboard
322110-2	Pulp Mills (Phase II)	PSC	430	Pulp, Paper And Paperboard
322110-1	Pulp Mills (Phase I)	PSC	430	Pulp, Paper And Paperboard
322110	Pulp Mills	PSC	430	Pulp, Paper And Paperboard
322121-2	Paper (except Newsprint) Mills (Phase II)	PSC	430	Pulp, Paper And Paperboard
322121-1	Paper (except Newsprint) Mills (Phase I)	PSC	430	Pulp, Paper And Paperboard
322122-2	Newsprint Mills (Phase II)	PSC	430	Pulp, Paper And Paperboard
322121	Paper (except Newsprint) Mills	PSC	430	Pulp, Paper And Paperboard
322122-1	Newsprint Mills (Phase I)	PSC	430	Pulp, Paper And Paperboard
322122	Newsprint Mills	PSC	430	Pulp, Paper And Paperboard
322130-2	Paperboard Mills (Phase II)	PSC	430	Pulp, Paper And Paperboard
322130-1	Paperboard Mills (Phase I)	PSC	430	Pulp, Paper And Paperboard
322130	Paperboard Mills	PSC	430	Pulp, Paper And Paperboard
322211	Corrugated and Solid Fiber Box Manufacturing	PSC	430	Pulp, Paper And Paperboard
322212	Folding Paperboard Box Manufacturing	PSC	430	Pulp, Paper And Paperboard
322214	Fiber Can, Tube, Drum, and Similar Products Manufacturing	PSC	430	Pulp, Paper And Paperboard
322215	Nonfolding Sanitary Food Container Manufacturing	PSC	430	Pulp, Paper And Paperboard
322221	Coated and Laminated Packaging Paper Manufacturing	PSC	430	Pulp, Paper And Paperboard
322222	Coated and Laminated Paper Manufacturing	PSC	430	Pulp, Paper And Paperboard
322223	Coated Paper Bag and Pouch Manufacturing	NAICS	26	Paper & Allied Products
322224	Uncoated Paper and Multiwall Bag Manufacturing	PSC	430	Pulp, Paper And Paperboard
322225	Laminated Aluminum Foil Manufacturing for Flexible Packaging Uses	PSC	433	Metal Finishing
322226	Surface-Coated Paperboard Manufacturing	NAICS	26	Paper & Allied Products

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
322231	Die-Cut Paper and Paperboard Office Supplies Manufacturing	PSC	430	Pulp, Paper And Paperboard
322291-2	Sanitary Paper Product Manufacturing (Phase II)	PSC	430	Pulp, Paper And Paperboard
322291	Sanitary Paper Product Manufacturing	PSC	430	Pulp, Paper And Paperboard
322299	All Other Converted Paper Product Manufacturing	PSC	430	Pulp, Paper And Paperboard
323110	Commercial Lithographic Printing	PNC	NA	Printing & Publishing
323111	Commercial Gravure Printing	PNC	NA	Printing & Publishing
323112	Commercial Flexographic Printing	PNC	NA	Printing & Publishing
323113	Commercial Screen Printing	PNC	NA	Printing & Publishing
323115	Digital Printing	PNC	NA	Printing & Publishing
323116	Manifold Business Forms Printing	PNC	NA	Printing & Publishing
323117	Books Printing	PNC	NA	Printing & Publishing
323118	Blankbook, Looseleaf Binders, and Devices Manufacturing	PNC	NA	Printing & Publishing
323119	Other Commercial Printing	PNC	NA	Printing & Publishing
323121	Tradebinding and Related Work	PNC	NA	Printing & Publishing
323122	Prepress Services	PSC	433	Metal Finishing
324110	Petroleum Refineries	PSC	419	Petroleum Refining
324121	Asphalt Paving Mixture and Block Manufacturing	PSC	443	Paving And Roofing Materials (Tars And Asphalt)
324122	Asphalt Shingle and Coating Materials Manufacturing	PSC	443	Paving And Roofing Materials (Tars And Asphalt)
324191	Petroleum Lubricating Oil and Grease Manufacturing	PSC	419	Petroleum Refining
324199	All Other Petroleum and Coal Products Manufacturing	PSC	419	Petroleum Refining
324199OCPSF	All Other Petroleum and Coal Products Manufacturing (Organic Chemicals, Plastics And Synthetic Fibers)	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325110	Petrochemical Manufacturing	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325120	Industrial Gas Manufacturing	PSC	415	Inorganic Chemicals Manufacturing
325120OCPSF	Industrial Gas Manufacturing (Organic Chemicals, Plastics, and Synthetic Fibers)	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325131	Inorganic Dye and Pigment Manufacturing	PSC	415	Inorganic Chemicals Manufacturing
325132	Synthetic Organic Dye and Pigment Manufacturing	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325181	Alkalies and Chlorine Manufacturing	PSC	415	Inorganic Chemicals Manufacturing

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
325182	Carbon Black Manufacturing	PSC	458	Carbon Black Manufacturing
325188	All Other Basic Inorganic Chemical Manufacturing	PSC	415	Inorganic Chemicals Manufacturing
325188NMM	All Other Basic Inorganic Chemical Manufacturing (Nonferrous Metals Manufacturing)	PSC	421	Nonferrous Metals Manufacturing
325188OCPSF	All Other Basic Inorganic Chemical Manufacturing (Organic Chemicals, Plastics, and Synthetic Fibers)	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325188PHOS	All Other Basic Inorganic Chemical Manufacturing (Phosphate Manufacturing)	PSC	422	Phosphate Manufacturing
325188COP	All Other Basic Inorganic Chemical Manufacturing (Copper Forming)	PSC	468	Copper forming
325188NMF	All Other Basic Inorganic Chemical Manufacturing (Nonferrous Metals Forming And Metal Powders)	PSC	471	Nonferrous Metals Forming And Metal Powders
325188Ph	All Other Basic Inorganic Chemical Manufacturing (Phosphate Manufacturing)	PSC	439	Pharmaceutical Manufacturing
325188SD	All Other Basic Inorganic Chemical Manufacturing (Soap And Detergent Manufacturing)	PSC	417	Soap And Detergent Manufacturing
325191	Gum and Wood Chemical Manufacturing	PSC	454	Gum And Wood Chemicals Manufacturing
325192	Cyclic Crude and Intermediate Manufacturing	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325192P	Cyclic Crude and Intermediate Manufacturing (Pesticide Chemicals)	PSC	455	Pesticide Chemicals
325193	Ethyl Alcohol Manufacturing	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325199	All Other Basic Organic Chemical Manufacturing	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325199P	All Other Basic Organic Chemical Manufacturing (Pesticide Chemicals)	PSC	455	Pesticide Chemicals
325211	Plastics Material and Resin Manufacturing	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325211P	Plastics Material and Resin Manufacturing (Pesticide Chemicals)	PSC	455	Pesticide Chemicals
325212	Synthetic Rubber Manufacturing	PSC	428	Rubber Manufacturing
325221	Cellulosic Organic Fiber Manufacturing	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325222	Noncellulosic Organic Fiber Manufacturing	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325311	Nitrogenous Fertilizer Manufacturing	PSC	418	Fertilizer Manufacturing
325312	Phosphatic Fertilizer Manufacturing	PSC	422	Phosphate Manufacturing

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
325314	Fertilizer (Mixing Only) Manufacturing	PSC	418	Fertilizer Manufacturing
325320	Pesticide and Other Agricultural Chemical Manufacturing	PSC	455	Pesticide Chemicals
325411	Medicinal and Botanical Manufacturing	PSC	439	Pharmaceutical Manufacturing
325412	Pharmaceutical Preparation Manufacturing	PSC	439	Pharmaceutical Manufacturing
325412P	Pharmaceutical Preparation Manufacturing (Pesticide Chemicals)	PSC	455	Pesticide Chemicals
325413	In-Vitro Diagnostic Substance Manufacturing	PSC	439	Pharmaceutical Manufacturing
325414	Biological Product (except Diagnostic) Manufacturing	PSC	439	Pharmaceutical Manufacturing
325510	Paint and Coating Manufacturing	PSC	446	Paint Formulating
325510OCPSF	Paint and Coating Manufacturing (Organic Chemicals, Plastics, and Synthetic Fibers)	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325510P	Paint and Coating Manufacturing (Pesticide Chemicals)	PSC	455	Pesticide Chemicals
325510CEM	Paint and Coating Manufacturing (Cement Manufacturing)	PSC	411	Cement Manufacturing
325510INORG	Paint and Coating Manufacturing (Cement Manufacturing)	PSC	415	Inorganic Chemicals Manufacturing
325520	Adhesive Manufacturing	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325611	Soap and Other Detergent Manufacturing	PSC	417	Soap And Detergent Manufacturing
325611OCPSF	Soap and Other Detergent Manufacturing (Organic Chemicals, Plastics, and Synthetic Fibers)	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325611P	Soap and Other Detergent Manufacturing (Pesticide Chemicals)	PSC	455	Pesticide Chemicals
325612	Polish and Other Sanitation Good Manufacturing	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325613	Surface Active Agent Manufacturing	PSC	417	Soap And Detergent Manufacturing
325620	Toilet Preparation Manufacturing	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325910	Printing Ink Manufacturing	PSC	447	Ink Formulating
325920	Explosives Manufacturing	PSC	457	Explosives Manufacturing
325991	Custom Compounding of Purchased Resins	PSC	463	Plastics Molding And Forming
325992	Photographic Film, Paper, Plate, and Chemical Manufacturing	PSC	433	Metal Finishing

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
325998INORG	All Other Miscellaneous Chemical Product and Preparation Manufacturing (Inorganic chemicals manufacturing)	PSC	415	Inorganic Chemicals Manufacturing
325998MF	All Other Miscellaneous Chemical Product and Preparation Manufacturing (Metal Finishing)	PSC	433	Metal Finishing
325998PH	All Other Miscellaneous Chemical Product and Preparation Manufacturing (Pharmaceutical Manufacturing)	PSC	439	Pharmaceutical Manufacturing
325998P	All Other Miscellaneous Chemical Product and Preparation Manufacturing (Pesticide Chemicals)	PSC	455	Pesticide Chemicals
325998NMF	All Other Miscellaneous Chemical Product and Preparation Manufacturing (Nonferrous Metals Forming And Metal Powders)	PSC	471	Nonferrous Metals Forming And Metal Powders
325998BS	All Other Miscellaneous Chemical Product and Preparation Manufacturing (Business Services)	NAICS	73	Business Services
325998SD	All Other Miscellaneous Chemical Product and Preparation Manufacturing (Soap And Detergent Manufacturing)	PSC	417	Soap And Detergent Manufacturing
325998PR	All Other Miscellaneous Chemical Product and Preparation Manufacturing (Petroleum Refining)	PSC	419	Petroleum Refining
326111	Plastics Bag and Pouch Manufacturing	NAICS	26	Paper & Allied Products
326112	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	PSC	430	Pulp, Paper And Paperboard
326113	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	PSC	463	Plastics Molding And Forming
326121	Unlaminated Plastics Profile Shape Manufacturing	PSC	463	Plastics Molding And Forming
326122	Plastics Pipe and Pipe Fitting Manufacturing	PSC	463	Plastics Molding And Forming
326130	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	PSC	463	Plastics Molding And Forming
326140	Polystyrene Foam Product Manufacturing	PSC	463	Plastics Molding And Forming

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
326150	Urethane and Other Foam Product (except Polystyrene) Manufacturing	PSC	463	Plastics Molding And Forming
326160	Plastics Bottle Manufacturing	PSC	463	Plastics Molding And Forming
326191	Plastics Plumbing Fixture Manufacturing	PSC	463	Plastics Molding And Forming
326192	Resilient Floor Covering Manufacturing	PSC	443	Paving And Roofing Materials (Tars And Asphalt)
326199	All Other Plastics Product Manufacturing	PSC	463	Plastics Molding And Forming
326199MF	All Other Plastics Product Manufacturing (Metal Finishing)	PSC	433	Metal Finishing
326199MF	All Other Plastics Product Manufacturing (Metal Finishing)	PSC	433	Metal Finishing
326199OCPSF	All Other Plastics Product Manufacturing (Organic Chemicals, Plastics And Synthetic Fibers)	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
326199GLASS	All Other Plastics Product Manufacturing (Glass Manufacturing)	PSC	426	Glass Manufacturing
326211	Tire Manufacturing (except Retreading)	PSC	428	Rubber Manufacturing
326220	Rubber and Plastics Hoses and Belting Manufacturing	PSC	428	Rubber Manufacturing
326291	Rubber Product Manufacturing for Mechanical Use	PSC	428	Rubber Manufacturing
326299	All Other Rubber Product Manufacturing	PSC	428	Rubber Manufacturing
327111	Vitreous China Plumbing Fixture and China and Earthenware Bathroom Accessories Manufacturing	PSC	436	Mineral Mining And Processing
327112	Vitreous China, Fine Earthenware, and Other Pottery Product Manufacturing	PSC	436	Mineral Mining And Processing
327113	Porcelain Electrical Supply Manufacturing	PSC	436	Mineral Mining And Processing
327121	Brick and Structural Clay Tile Manufacturing	PSC	436	Mineral Mining And Processing
327122	Ceramic Wall and Floor Tile Manufacturing	PSC	436	Mineral Mining And Processing
327123	Other Structural Clay Product Manufacturing	PSC	436	Mineral Mining And Processing
327124	Clay Refractory Manufacturing	PSC	436	Mineral Mining And Processing
327125	Nonclay Refractory Manufacturing	PSC	436	Mineral Mining And Processing
327211	Flat Glass Manufacturing	PSC	426	Glass Manufacturing
327212	Other Pressed and Blown Glass and Glassware Manufacturing	PSC	426	Glass Manufacturing



**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
327213	Glass Container Manufacturing	PSC	426	Glass Manufacturing
327215	Glass Product Manufacturing Made of Purchased Glass	PSC	426	Glass Manufacturing
327310	Cement Manufacturing	PSC	411	Cement Manufacturing
327320	Ready-Mix Concrete Manufacturing	PSC	411	Cement Manufacturing
327332	Concrete Pipe Manufacturing	PSC	411	Cement Manufacturing
327390	Other Concrete Product Manufacturing	PSC	411	Cement Manufacturing
327410	Lime Manufacturing	PSC	436	Mineral Mining And Processing
327420	Gypsum Product Manufacturing	PSC	436	Mineral Mining And Processing
327910	Abrasive Product Manufacturing	PSC	436	Mineral Mining And Processing
327991	Cut Stone and Stone Product Manufacturing	NAICS	32	Stone, Clay, & Glass Products
327992	Ground or Treated Mineral and Earth Manufacturing	PSC	436	Mineral Mining And Processing
327993	Mineral Wool Manufacturing	PSC	426	Glass Manufacturing
327999	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	PSC	436	Mineral Mining And Processing
331111	Iron and Steel Mills	PSC	420	Iron And Steel Manufacturing
331111NMF	Iron and Steel Mills (Nonferrous Metals Forming and Metal Powders)	PSC	471	Nonferrous Metals Forming And Metal Powders
331111MF	Iron and Steel Mills (Metal Finishing)	PSC	433	Metal Finishing
331112	Electrometallurgical Ferroalloy Product Manufacturing	PSC	424	Ferroalloy Manufacturing
331210	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	PSC	420	Iron And Steel Manufacturing
331221	Rolled Steel Shape Manufacturing	PSC	420	Iron And Steel Manufacturing
331221NMF	Rolled Steel Shape Manufacturing (Nonferrous Metals Forming and Metal Powders)	PSC	471	Nonferrous Metals Forming And Metal Powders
331222	Steel Wire Drawing	PSC	420	Iron And Steel Manufacturing
331311	Alumina Refining	PSC	415	Inorganic Chemicals Manufacturing
331312	Primary Aluminum Production	PSC	421	Nonferrous Metals Manufacturing
331314	Secondary Smelting and Alloying of Aluminum	PSC	421	Nonferrous Metals Manufacturing
331314MMC	Secondary Smelting and Alloying of Aluminum (Metal Molding And Casting [Foundries])	PSC	464	Metal Molding And Casting (Foundries)

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
331314AL	Secondary Smelting and Alloying of Aluminum (Aluminum Forming)	PSC	467	Aluminum forming
331314MF	Secondary Smelting and Alloying of Aluminum (Metal Finishing)	PSC	433	Metal Finishing
331315	Aluminum Sheet, Plate, and Foil Manufacturing	PSC	467	Aluminum forming
331316	Aluminum Extruded Product Manufacturing	PSC	467	Aluminum forming
331319	Other Aluminum Rolling and Drawing	PSC	467	Aluminum forming
331411	Primary Smelting and Refining of Copper	PSC	421	Nonferrous Metals Manufacturing
331419	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)	PSC	421	Nonferrous Metals Manufacturing
331421	Copper Rolling, Drawing, and Extruding	PSC	468	Copper forming
331422	Copper Wire (except Mechanical) Drawing	PSC	468	Copper forming
331423	Secondary Smelting, Refining, and Alloying of Copper	PSC	421	Nonferrous Metals Manufacturing
331423NMF	Secondary Smelting, Refining, and Alloying of Copper (Nonferrous Metals Forming and Metal Powders)	PSC	471	Nonferrous Metals Forming And Metal Powders
331423MMC	Secondary Smelting, Refining, and Alloying of Copper (Metal Molding And Casting [Foundries])	PSC	464	Metal Molding And Casting (Foundries)
331491	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	PSC	471	Nonferrous Metals Forming And Metal Powders
331491NMF	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding (Nonferrous Metals Forming And Metal Powders)	PSC	471	Nonferrous Metals Forming And Metal Powders
331491MF	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding (Metal Finishing)	PSC	433	Metal Finishing
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	PSC	421	Nonferrous Metals Manufacturing
331492NMF	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (Nonferrous Metals Forming and Metal Powders)	PSC	471	Nonferrous Metals Forming And Metal Powders
331492COP		PSC	468	Copper forming
331511	Iron Foundries	PSC	464	Metal Molding And Casting (Foundries)
331512	Steel Investment Foundries	PSC	464	Metal Molding And Casting (Foundries)

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
331513	Steel Foundries (except Investment)	PSC	464	Metal Molding And Casting (Foundries)
331521	Aluminum Die-Casting Foundries	PSC	467	Aluminum forming
331521	Aluminum Die-Casting Foundries	PSC	421	Nonferrous Metals Manufacturing
331521MMC	Aluminum Die-Casting Foundries (Metal Molding And Casting [Foundries])	PSC	464	Metal Molding And Casting (Foundries)
331522	Nonferrous (except Aluminum) Die-Casting Foundries	PSC	464	Metal Molding And Casting (Foundries)
331524	Aluminum Foundries (except Die-Casting)	PSC	464	Metal Molding And Casting (Foundries)
331525	Copper Foundries (except Die-Casting)	PSC	464	Metal Molding And Casting (Foundries)
331528	Other Nonferrous Foundries (except Die-Casting)	PSC	464	Metal Molding And Casting (Foundries)
332111	Iron and Steel Forging	PSC	433	Metal Finishing
332112	Nonferrous Forging	PSC	467	Aluminum forming
332112	Nonferrous Forging	PSC	468	Copper forming
332112	Nonferrous Forging	PSC	471	Nonferrous Metals Forming And Metal Powders
332112MF	Nonferrous Forging (Metal Finishing)	PSC	433	Metal Finishing
332112IRON	Nonferrous Forging (Iron And Steel Manufacturing)	PSC	420	Iron And Steel Manufacturing
332114	Custom Roll Forming	PSC	433	Metal Finishing
332115	Crown and Closure Manufacturing	PSC	433	Metal Finishing
332116	Metal Stamping	PSC	433	Metal Finishing
332117	Powder Metallurgy Part Manufacturing	PSC	433	Metal Finishing
332211	Cutlery and Flatware (except Precious) Manufacturing	PSC	433	Metal Finishing
332212	Hand and Edge Tool Manufacturing	PSC	433	Metal Finishing
332213	Saw Blade and Handsaw Manufacturing	PSC	433	Metal Finishing
332214	Kitchen Utensil, Pot, and Pan Manufacturing	PSC	433	Metal Finishing
332311	Prefabricated Metal Building and Component Manufacturing	PSC	433	Metal Finishing
332312	Fabricated Structural Metal Manufacturing	PSC	433	Metal Finishing
332313	Plate Work Manufacturing	PSC	433	Metal Finishing
332321	Metal Window and Door Manufacturing	PSC	433	Metal Finishing
332322	Sheet Metal Work Manufacturing	PSC	433	Metal Finishing

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
332323	Ornamental and Architectural Metal Work Manufacturing	PSC	433	Metal Finishing
332410	Power Boiler and Heat Exchanger Manufacturing	PSC	433	Metal Finishing
332420	Metal Tank (Heavy Gauge) Manufacturing	PSC	433	Metal Finishing
332431	Metal Can Manufacturing	PSC	465	Coil Coating
332439	Other Metal Container Manufacturing	PSC	433	Metal Finishing
332510	Hardware Manufacturing	PSC	433	Metal Finishing
332611	Spring (Heavy Gauge) Manufacturing	PSC	433	Metal Finishing
332612	Spring (Light Gauge) Manufacturing	PSC	433	Metal Finishing
332618	Other Fabricated Wire Product Manufacturing	PSC	433	Metal Finishing
332618IRON	Other Fabricated Wire Product Manufacturing (Iron and Steel Manufacturing)	PSC	420	Iron And Steel Manufacturing
332618NMF	Other Fabricated Wire Product Manufacturing (Nonferrous Metals Forming and Metal Powders)	PSC	471	Nonferrous Metals Forming And Metal Powders
332618PP	Other Fabricated Wire Product Manufacturing (Printing & Publishing)	PNC	NA	Printing & Publishing
332710	Machine Shops	PSC	433	Metal Finishing
332721	Precision Turned Product Manufacturing	PSC	433	Metal Finishing
332722	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	PSC	433	Metal Finishing
332811	Metal Heat Treating	PSC	433	Metal Finishing
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	PSC	433	Metal Finishing
332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	PSC	413	Electroplating
332813MF	Electroplating, Plating, Polishing, Anodizing, and Coloring (Metal Finishing)	PSC	433	Metal Finishing
332813MF	Electroplating, Plating, Polishing, Anodizing, and Coloring (Metal Finishing)	PSC	433	Metal Finishing
332813PMF	Electroplating, Plating, Polishing, Anodizing, and Coloring (Plastics Molding And Forming)	PSC	463	Plastics Molding And Forming
332813AL	Electroplating, Plating, Polishing, Anodizing, and Coloring (Aluminum forming)	PSC	467	Aluminum forming

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
332813PP	Electroplating, Plating, Polishing, Anodizing, and Coloring (Printing & Publishing)	PNC	NA	Printing & Publishing
332813IRON	Electroplating, Plating, Polishing, Anodizing, and Coloring (Iron and Steel Manufacturing)	PSC	420	Iron And Steel Manufacturing
332911	Industrial Valve Manufacturing	PSC	433	Metal Finishing
332912	Fluid Power Valve and Hose Fitting Manufacturing	PSC	433	Metal Finishing
332913	Plumbing Fixture Fitting and Trim Manufacturing	PSC	433	Metal Finishing
332919	Other Metal Valve and Pipe Fitting Manufacturing	PSC	433	Metal Finishing
332991	Ball and Roller Bearing Manufacturing	PSC	433	Metal Finishing
332992	Small Arms Ammunition Manufacturing	PSC	433	Metal Finishing
332992	Small Arms Ammunition Manufacturing	PSC	471	Nonferrous Metals Forming And Metal Powders
332993	Ammunition (except Small Arms) Manufacturing	PSC	433	Metal Finishing
332993	Ammunition (except Small Arms) Manufacturing	PSC	471	Nonferrous Metals Forming And Metal Powders
332993MF	Small Arms Ammunition Manufacturing (Metal Finishing)	PSC	433	Metal Finishing
332994	Small Arms Manufacturing	PSC	433	Metal Finishing
332995	Other Ordnance and Accessories Manufacturing	PSC	433	Metal Finishing
332996	Fabricated Pipe and Pipe Fitting Manufacturing	PSC	433	Metal Finishing
332998	Enameled Iron and Metal Sanitary Ware Manufacturing	PSC	433	Metal Finishing
332999	All Other Miscellaneous Fabricated Metal Product Manufacturing	PSC	433	Metal Finishing
332999DC	All Other Miscellaneous Fabricated Metal Product Manufacturing (DC)	PSC	433	Metal Finishing
332999TC	All Other Miscellaneous Fabricated Metal Product Manufacturing (TC)	PSC	467	Aluminum forming
332999TC	All Other Miscellaneous Fabricated Metal Product Manufacturing (TC)	PSC	468	Copper forming
332999DC	All Other Miscellaneous Fabricated Metal Product Manufacturing (DC)	PSC	471	Nonferrous Metals Forming And Metal Powders
332999TC	All Other Miscellaneous Fabricated Metal Product Manufacturing (TC)	PSC	471	Nonferrous Metals Forming And Metal Powders
333111	Farm Machinery and Equipment Manufacturing	PSC	433	Metal Finishing

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
333112	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	PSC	433	Metal Finishing
333120	Construction Machinery Manufacturing	PSC	433	Metal Finishing
333131	Mining Machinery and Equipment Manufacturing	PSC	433	Metal Finishing
333132	Oil and Gas Field Machinery and Equipment Manufacturing	PSC	433	Metal Finishing
333210	Sawmill and Woodworking Machinery Manufacturing	PSC	433	Metal Finishing
333220	Plastics and Rubber Industry Machinery Manufacturing	PSC	433	Metal Finishing
333291	Paper Industry Machinery Manufacturing	PSC	433	Metal Finishing
333292	Textile Machinery Manufacturing	PSC	433	Metal Finishing
333293	Printing Machinery and Equipment Manufacturing	PSC	433	Metal Finishing
333294	Food Product Machinery Manufacturing	PSC	433	Metal Finishing
333295	Semiconductor Machinery Manufacturing	PSC	433	Metal Finishing
333298	All Other Industrial Machinery Manufacturing	PSC	433	Metal Finishing
333311	Automatic Vending Machine Manufacturing	PSC	433	Metal Finishing
333312	Commercial Laundry, Drycleaning, and Pressing Machine Manufacturing	PSC	433	Metal Finishing
333313	Office Machinery Manufacturing	PSC	433	Metal Finishing
333314	Optical Instrument and Lens Manufacturing	PSC	433	Metal Finishing
333315	Photographic and Photocopying Equipment Manufacturing	PSC	433	Metal Finishing
333319	Other Commercial and Service Industry Machinery Manufacturing	PSC	433	Metal Finishing
333411	Air Purification Equipment Manufacturing	PSC	433	Metal Finishing
333412	Industrial and Commercial Fan and Blower Manufacturing	PSC	433	Metal Finishing
333414	Heating Equipment (except Warm Air Furnaces) Manufacturing	PSC	433	Metal Finishing
333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	PSC	433	Metal Finishing
333511	Industrial Mold Manufacturing	PSC	433	Metal Finishing

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
333512	Machine Tool (Metal Cutting Types) Manufacturing	PSC	433	Metal Finishing
333513	Machine Tool (Metal Forming Types) Manufacturing	PSC	433	Metal Finishing
333514	Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	PSC	433	Metal Finishing
333515	Cutting Tool and Machine Tool Accessory Manufacturing	PSC	433	Metal Finishing
333516	Rolling Mill Machinery and Equipment Manufacturing	PSC	433	Metal Finishing
333518	Other Metalworking Machinery Manufacturing	PSC	433	Metal Finishing
333611	Turbine and Turbine Generator Set Units Manufacturing	PSC	433	Metal Finishing
333612	Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	PSC	433	Metal Finishing
333613	Mechanical Power Transmission Equipment Manufacturing	PSC	433	Metal Finishing
333618	Other Engine Equipment Manufacturing	PSC	433	Metal Finishing
333911	Pump and Pumping Equipment Manufacturing	PSC	433	Metal Finishing
333912	Air and Gas Compressor Manufacturing	PSC	433	Metal Finishing
333913	Measuring and Dispensing Pump Manufacturing	PSC	433	Metal Finishing
333921	Elevator and Moving Stairway Manufacturing	PSC	433	Metal Finishing
333922	Conveyor and Conveying Equipment Manufacturing	PSC	433	Metal Finishing
333923	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	PSC	433	Metal Finishing
333924	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	PSC	433	Metal Finishing
333991	Power-Driven Handtool Manufacturing	PSC	433	Metal Finishing
333992	Welding and Soldering Equipment Manufacturing	PSC	433	Metal Finishing
333993	Packaging Machinery Manufacturing	PSC	433	Metal Finishing
333994	Industrial Process Furnace and Oven Manufacturing	PSC	433	Metal Finishing
333995	Fluid Power Cylinder and Actuator Manufacturing	PSC	433	Metal Finishing
333996	Fluid Power Pump and Motor Manufacturing	PSC	433	Metal Finishing
333997	Scale and Balance Manufacturing	PSC	433	Metal Finishing

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
333999	All Other Miscellaneous General Purpose Machinery Manufacturing	PSC	433	Metal Finishing
334111	Electronic Computer Manufacturing	PSC	433	Metal Finishing
334112	Computer Storage Device Manufacturing	PSC	433	Metal Finishing
334119	Other Computer Peripheral Equipment Manufacturing	PSC	433	Metal Finishing
334210	Telephone Apparatus Manufacturing	PSC	433	Metal Finishing
334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	PSC	433	Metal Finishing
334290	Other Communications Equipment Manufacturing	PSC	433	Metal Finishing
334310	Audio and Video Equipment Manufacturing	PSC	433	Metal Finishing
334411	Electron Tube Manufacturing	PSC	469	Electrical And Electronic Components
334412	Bare Printed Circuit Board Manufacturing	PSC	433	Metal Finishing
334413	Semiconductor and Related Device Manufacturing	PSC	469	Electrical And Electronic Components
334414	Electronic Capacitor Manufacturing	PSC	433	Metal Finishing
334415	Electronic Resistor Manufacturing	PSC	433	Metal Finishing
334416	Electronic Coil, Transformer, and Other Inductor Manufacturing	PSC	433	Metal Finishing
334417	Electronic Connector Manufacturing	PSC	433	Metal Finishing
334418	Printed Circuit Assembly (Electronic Assembly) Manufacturing	PSC	433	Metal Finishing
334419	Other Electronic Component Manufacturing	PSC	433	Metal Finishing
334510	Electromedical and Electrotherapeutic Apparatus Manufacturing	PSC	433	Metal Finishing
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	PSC	433	Metal Finishing
334512	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	PSC	433	Metal Finishing
334513	Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables	PSC	433	Metal Finishing
334514	Totalizing Fluid Meter and Counting Device Manufacturing	PSC	433	Metal Finishing



**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals	PSC	433	Metal Finishing
334516	Analytical Laboratory Instrument Manufacturing	PSC	433	Metal Finishing
334517	Irradiation Apparatus Manufacturing	PSC	433	Metal Finishing
334518	Watch, Clock, and Part Manufacturing	PSC	433	Metal Finishing
334519	Other Measuring and Controlling Device Manufacturing	PSC	433	Metal Finishing
334612	Prerecorded Compact Disc (except Software), Tape, and Record Reproducing	PSC	433	Metal Finishing
334613	Magnetic and Optical Recording Media Manufacturing	PSC	433	Metal Finishing
335110	Electric Lamp Bulb and Part Manufacturing	PSC	433	Metal Finishing
335121	Residential Electric Lighting Fixture Manufacturing	PSC	433	Metal Finishing
335122	Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	PSC	433	Metal Finishing
335129	Other Lighting Equipment Manufacturing	PSC	433	Metal Finishing
335211	Electric Housewares and Household Fan Manufacturing	PSC	433	Metal Finishing
335212	Household Vacuum Cleaner Manufacturing	PSC	433	Metal Finishing
335221	Household Cooking Appliance Manufacturing	PSC	466	Porcelain Enameling
335222	Household Refrigerator and Home Freezer Manufacturing	PSC	433	Metal Finishing
335224	Household Laundry Equipment Manufacturing	PSC	433	Metal Finishing
335228	Other Major Household Appliance Manufacturing	PSC	433	Metal Finishing
335311	Power, Distribution, and Specialty Transformer Manufacturing	PSC	433	Metal Finishing
335312	Motor and Generator Manufacturing	PSC	433	Metal Finishing
335313	Switchgear and Switchboard Apparatus Manufacturing	PSC	433	Metal Finishing
335314	Relay and Industrial Control Manufacturing	PSC	433	Metal Finishing
335911	Storage Battery Manufacturing	PSC	461	Battery Manufacturing
335912	Primary Battery Manufacturing	PSC	461	Battery Manufacturing
335921	Fiber Optic Cable Manufacturing	PSC	426	Glass Manufacturing
335921	Fiber Optic Cable Manufacturing	PSC	463	Plastics Molding And Forming

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
335929	Other Communication and Energy Wire Manufacturing	PSC	467	Aluminum forming
335929	Other Communication and Energy Wire Manufacturing	PSC	468	Copper forming
335929	Other Communication and Energy Wire Manufacturing	PSC	471	Nonferrous Metals Forming And Metal Powders
335931	Current-Carrying Wiring Device Manufacturing	PSC	433	Metal Finishing
335932	Noncurrent-Carrying Wiring Device Manufacturing	PSC	433	Metal Finishing
335991	Carbon and Graphite Product Manufacturing	PSC	433	Metal Finishing
335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing	PSC	433	Metal Finishing
336111	Automobile Manufacturing	PSC	433	Metal Finishing
336112	Light Truck and Utility Vehicle Manufacturing	PSC	433	Metal Finishing
336120	Heavy Duty Truck Manufacturing	PSC	433	Metal Finishing
336211	Motor Vehicle Body Manufacturing	PSC	433	Metal Finishing
336212	Truck Trailer Manufacturing	PSC	433	Metal Finishing
336213	Motor Home Manufacturing	PSC	433	Metal Finishing
336214	Travel Trailer and Camper Manufacturing	PSC	433	Metal Finishing
336311	Carburetor, Piston, Piston Ring, and Valve Manufacturing	PSC	433	Metal Finishing
336312	Gasoline Engine and Engine Parts Manufacturing	PSC	433	Metal Finishing
336321	Vehicular Lighting Equipment Manufacturing	PSC	433	Metal Finishing
336322	Other Motor Vehicle Electrical and Electronic Equipment Manufacturing	PSC	433	Metal Finishing
336330	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	PSC	433	Metal Finishing
336340	Motor Vehicle Brake System Manufacturing	PSC	433	Metal Finishing
336350	Motor Vehicle Transmission and Power Train Parts Manufacturing	PSC	433	Metal Finishing
336360	Motor Vehicle Seating and Interior Trim Manufacturing	PSC	410	Textile Mills
336360MF	Motor Vehicle Seating and Interior Trim Manufacturing (Metal Finishing)	PSC	433	Metal Finishing
336370	Motor Vehicle Metal Stamping	PSC	433	Metal Finishing
336391	Motor Vehicle Air-Conditioning Manufacturing	PSC	433	Metal Finishing

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
336399	All Other Motor Vehicle Parts Manufacturing	PSC	433	Metal Finishing
336411	Aircraft Manufacturing	PSC	433	Metal Finishing
336412	Aircraft Engine and Engine Parts Manufacturing	PSC	433	Metal Finishing
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	PSC	433	Metal Finishing
336414	Guided Missile and Space Vehicle Manufacturing	PSC	433	Metal Finishing
336415	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	PSC	433	Metal Finishing
336510	Railroad Rolling Stock Manufacturing	PSC	433	Metal Finishing
336611	Ship Building and Repairing	PSC	433	Metal Finishing
336612	Boat Building	PSC	433	Metal Finishing
336991	Motorcycle, Bicycle, and Parts Manufacturing	PSC	433	Metal Finishing
336992	Military Armored Vehicle, Tank, and Tank Component Manufacturing	PSC	433	Metal Finishing
336999	All Other Transportation Equipment Manufacturing	PSC	433	Metal Finishing
337110	Wood Kitchen Cabinet and Countertop Manufacturing	PSC	429	Timber Products Processing
337122	Nonupholstered Wood Household Furniture Manufacturing	PSC	429	Timber Products Processing
337124	Metal Household Furniture Manufacturing	PSC	433	Metal Finishing
337127	Institutional Furniture Manufacturing	PSC	433	Metal Finishing
337129	Wood Television, Radio, and Sewing Machine Cabinet Manufacturing	PSC	429	Timber Products Processing
337211	Wood Office Furniture Manufacturing	PSC	429	Timber Products Processing
337212	Custom Architectural Woodwork and Millwork Manufacturing	PSC	429	Timber Products Processing
337214	Office Furniture (except Wood) Manufacturing	PSC	433	Metal Finishing
337215	Showcase, Partition, Shelving, and Locker Manufacturing	PSC	433	Metal Finishing
337215TIM	Showcase, Partition, Shelving, and Locker Manufacturing (Timber Products Processing)	PSC	429	Timber Products Processing
337920	Blind and Shade Manufacturing	PSC	433	Metal Finishing

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
339111	Laboratory apparatus and furniture manufacturing	PSC	433	Metal Finishing
339112	Surgical and Medical Instrument Manufacturing	PSC	433	Metal Finishing
339113	Surgical Appliance and Supplies Manufacturing	PSC	433	Metal Finishing
339114	Dental Equipment and Supplies Manufacturing	PSC	433	Metal Finishing
339115	Ophthalmic Goods Manufacturing	PSC	433	Metal Finishing
339911	Jewelry (except Costume) Manufacturing	PSC	433	Metal Finishing
339912	Silverware and Hollowware Manufacturing	PSC	433	Metal Finishing
339913	Jewelers' Material and Lapidary Work Manufacturing	PSC	433	Metal Finishing
339914	Costume Jewelry and Novelty Manufacturing	PSC	433	Metal Finishing
339920	Sporting and Athletic Goods Manufacturing	PSC	433	Metal Finishing
339941	Pen and Mechanical Pencil Manufacturing	PSC	433	Metal Finishing
339943	Marking Device Manufacturing	PSC	433	Metal Finishing
339944	Carbon Paper and Inked Ribbon Manufacturing	NAICS	39	Misc. Manuf. Industries
339950	Sign Manufacturing	PSC	433	Metal Finishing
339991	Gasket, Packing, and Sealing Device Manufacturing	PSC	428	Rubber Manufacturing
339992	Musical Instrument Manufacturing	PSC	433	Metal Finishing
339993	Fastener, Button, Needle, and Pin Manufacturing	PSC	433	Metal Finishing
339995	Burial Casket Manufacturing	PSC	433	Metal Finishing
339999	All Other Miscellaneous Manufacturing	PSC	433	Metal Finishing
339999MIN	All Other Miscellaneous Manufacturing (Mineral Mining And Processing\)	PSC	436	Mineral Mining And Processing
339999P	All Other Miscellaneous Manufacturing (Pesticide Chemicals)	PSC	455	Pesticide Chemicals
339999PMF	All Other Miscellaneous Manufacturing (Plastics Molding And Forming)	PSC	463	Plastics Molding And Forming
339999NMF	All Other Miscellaneous Manufacturing (Nonferrous Metals Forming And Metal Powders)	PSC	471	Nonferrous Metals Forming And Metal Powders
339999OCPSF	All Other Miscellaneous Manufacturing (Organic Chemicals, Plastics And Synthetic Fibers)	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
423110	Automobile and Other Motor Vehicle Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
423120	Motor Vehicle Supplies and New Parts Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423140	Motor Vehicle Parts (Used) Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423310	Lumber, Plywood, Millwork, and Wood Panel Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423320	Brick, Stone, and Related Construction Material Merchant Wholesalers	PSC	436	Mineral Mining And Processing
423450	Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423510	Metal Service Centers and Other Metal Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423520	Coal and Other Mineral and Ore Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423620	Electrical and Electronic Appliance, Television, and Radio Set Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423690	Other Electronic Parts and Equipment Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423810	Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423830	Industrial Machinery and Equipment Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423840	Industrial Supplies Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423860	Transportation Equipment and Supplies (except Motor Vehicle) Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423910	Sporting and Recreational Goods and Supplies Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423920	Toy and Hobby Goods and Supplies Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
423930	Recyclable Material Merchant Wholesalers	NAICS	50	Wholesale Trade- Durable Goods
424210	Drugs and Druggists' Sundries Merchant Wholesalers	NAICS	51	Wholesale Trade- Nondurable Goods
424310	Piece Goods, Notions, and Other Dry Goods Merchant Wholesalers	NAICS	51	Wholesale Trade- Nondurable Goods
424340	Footwear Merchant Wholesalers	NAICS	51	Wholesale Trade- Nondurable Goods

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
424410	General Line Grocery Merchant Wholesalers	NAICS	51	Wholesale Trade- Nondurable Goods
424430	Dairy Product (except Dried or Canned) Merchant Wholesalers	NAICS	51	Wholesale Trade- Nondurable Goods
424440	Poultry and Poultry Product Merchant Wholesalers	PNC	NA	Miscellaneous Foods And Beverages
424460	Fish and Seafood Merchant Wholesalers	NAICS	51	Wholesale Trade- Nondurable Goods
424490	Other Grocery and Related Products Merchant Wholesalers	NAICS	51	Wholesale Trade- Nondurable Goods
424510	Grain and Field Bean Merchant Wholesalers	NAICS	51	Wholesale Trade- Nondurable Goods
424590	Other Farm Product Raw Material Merchant Wholesalers	PSC	406	Grain mills
424610	Plastics Materials and Basic Forms and Shapes Merchant Wholesalers	NAICS	51	Wholesale Trade- Nondurable Goods
424690	Other Chemical and Allied Products Merchant Wholesalers	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
424690P	Other Chemical and Allied Products Merchant Wholesalers (Pesticide Chemicals)	PSC	455	Pesticide Chemicals
424710	Petroleum Bulk Stations and Terminals	PSC	419	Petroleum Refining
424720	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)	NAICS	51	Wholesale Trade- Nondurable Goods
424820	Wine and Distilled Alcoholic Beverage Merchant Wholesalers	PNC	NA	Miscellaneous Foods And Beverages
424910	Farm Supplies Merchant Wholesalers	NAICS	51	Wholesale Trade- Nondurable Goods
424920	Book, Periodical, and Newspaper Merchant Wholesalers	NAICS	51	Wholesale Trade- Nondurable Goods
424990	Other Miscellaneous Nondurable Goods Merchant Wholesalers	NAICS	51	Wholesale Trade- Nondurable Goods
441110	New Car Dealers	NAICS	55	Automotive Dealers & Service Stations
441221	Motorcycle, ATV, and Personal Watercraft Dealers	NAICS	55	Automotive Dealers & Service Stations
441222	Boat Dealers	NAICS	55	Automotive Dealers & Service Stations
441229	All Other Motor Vehicle Dealers	NAICS	55	Automotive Dealers & Service Stations
441320	Tire Dealers	NAICS	55	Automotive Dealers & Service Stations
442291	Window Treatment Stores	NAICS	57	Furniture & Homefurnishings Stores

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
444110	Home Centers	NAICS	50	Wholesale Trade- Durable Goods
444130	Hardware Stores	PSC	442	Transportation Equipment Cleaning
444210	Outdoor Power Equipment Stores	PSC	442	Transportation Equipment Cleaning
445120	Convenience Stores	NAICS	54	Food Stores
445210	Meat Markets	PNC	NA	Miscellaneous Foods And Beverages
445220	Fish and Seafood Markets	NAICS	51	Wholesale Trade- Nondurable Goods
445230	Fruit and Vegetable Markets	NAICS	54	Food Stores
445291	Baked Goods Stores	NAICS	54	Food Stores
445292	Confectionery and Nut Stores	NAICS	54	Food Stores
445299	All Other Specialty Food Stores	NAICS	51	Wholesale Trade- Nondurable Goods
446110	Pharmacies and Drug Stores	NAICS	51	Wholesale Trade- Nondurable Goods
446130	Optical Goods Stores	NAICS	59	Miscellaneous Retail
446191	Food (Health) Supplement Stores	NAICS	51	Wholesale Trade- Nondurable Goods
447190	Other Gasoline Stations	NAICS	55	Automotive Dealers & Service Stations
451120	Hobby, Toy, and Game Stores	NAICS	50	Wholesale Trade- Durable Goods
451211	Book Stores	NAICS	51	Wholesale Trade- Nondurable Goods
452111	Department Stores (except Discount Department Stores)	NAICS	53	General Merchandise Stores
452112	Discount Department Stores	NAICS	53	General Merchandise Stores
452910	Warehouse Clubs and Supercenters	NAICS	54	Food Stores
453220	Gift, Novelty, and Souvenir Stores	NAICS	51	Wholesale Trade- Nondurable Goods
453920	Art Dealers	NAICS	59	Miscellaneous Retail
453930	Manufactured (Mobile) Home Dealers	NAICS	52	Building Materials & Gardening Supplies
453991	Tobacco Stores	NAICS	51	Wholesale Trade- Nondurable Goods
454319	Other Fuel Dealers	NAICS	59	Miscellaneous Retail
454390	Other Direct Selling Establishments	NAICS	54	Food Stores
481111	Scheduled Passenger Air Transportation	NAICS	45	Transportation By Air
481112	Scheduled Freight Air Transportation	NAICS	45	Transportation By Air
481219	Other Nonscheduled Air Transportation	NAICS	79	Amusement & Recreation Services
482111	Line-Haul Railroads	PSC	433	Metal Finishing
482112	Short Line Railroads	PSC	433	Metal Finishing

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
483111	Deep Sea Freight Transportation	NAICS	44	Water Transportation
484110	General Freight Trucking, Local	NAICS	42	Trucking & Warehousing
484121	General Freight Trucking, Long-Distance, Truckload	NAICS	42	Trucking & Warehousing
484122	General Freight Trucking, Long-Distance, Less Than Truckload	NAICS	42	Trucking & Warehousing
484210	Used Household and Office Goods Moving	NAICS	42	Trucking & Warehousing
484220	Specialized Freight (except Used Goods) Trucking, Local	NAICS	42	Trucking & Warehousing
484230	Specialized Freight (except Used Goods) Trucking, Long-Distance	NAICS	42	Trucking & Warehousing
485111	Mixed Mode Transit Systems	NAICS	41	Local & Interurban Passenger Transit
485112	Commuter Rail Systems	NAICS	41	Local & Interurban Passenger Transit
485113	Bus and Other Motor Vehicle Transit Systems	NAICS	41	Local & Interurban Passenger Transit
485119	Other Urban Transit Systems	NAICS	41	Local & Interurban Passenger Transit
485320	Limousine Service	NAICS	41	Local & Interurban Passenger Transit
485410	School and Employee Bus Transportation	NAICS	41	Local & Interurban Passenger Transit
485991	Special Needs Transportation	NAICS	41	Local & Interurban Passenger Transit
485999	All Other Transit and Ground Passenger Transportation	NAICS	41	Local & Interurban Passenger Transit
486110	Pipeline Transportation of Crude Oil	PSC	419	Petroleum Refining
486210	Pipeline Transportation of Natural Gas	NAICS	49	Electric, Gas, & Sanitary Services
486910	Pipeline Transportation of Refined Petroleum Products	NAICS	46	Pipelines, Except Natural Gas
486990	All Other Pipeline Transportation	NAICS	46	Pipelines, Except Natural Gas
487210	Scenic and Sightseeing Transportation, Water	NAICS	79	Amusement & Recreation Services
487990	Scenic and Sightseeing Transportation, Other	NAICS	79	Amusement & Recreation Services
488190	Other Support Activities for Air Transportation	PNC	NA	Airport Deicing
488310	Port and Harbor Operations	PSC	442	Transportation Equipment Cleaning
488320	Marine Cargo Handling	PSC	442	Transportation Equipment Cleaning
488410	Motor Vehicle Towing	NAICS	75	Auto Repair, Services, & Parking
488510	Freight Transportation Arrangement	NAICS	47	Transportation Services
488991	Packing and Crating	NAICS	47	Transportation Services



**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
488999	All Other Support Activities for Transportation	NAICS	47	Transportation Services
492210	Local Messengers and Local Delivery	NAICS	42	Trucking & Warehousing
493110	General Warehousing and Storage	NAICS	42	Trucking & Warehousing
493120	Refrigerated Warehousing and Storage	NAICS	42	Trucking & Warehousing
493130	Farm Product Warehousing and Storage	NAICS	42	Trucking & Warehousing
493190	Other Warehousing and Storage	NAICS	42	Trucking & Warehousing
511110	Newspaper Publishers	PNC	NA	Printing & Publishing
511120	Periodical Publishers	PNC	NA	Printing & Publishing
511130	Book Publishers	PNC	NA	Printing & Publishing
511191	Greeting Card Publishers	PNC	NA	Printing & Publishing
512210	Record Production	NAICS	89	Services, Not Elsewhere Classified
512220	Integrated Record Production/Distribution	PSC	433	Metal Finishing
512240	Sound Recording Studios	NAICS	73	Business Services
512290	Other Sound Recording Industries	NAICS	73	Business Services
515111	Radio Networks	NAICS	48	Communications
515112	Radio Stations	NAICS	48	Communications
516110	Internet publishing and broadcasting	PNC	NA	Printing & Publishing
517110	Wired Telecommunications Carriers	NAICS	48	Communications
517211	Paging Network	NAICS	48	Communications
517212	Cellular and Other Wireless Telecommunications	NAICS	48	Communications
517310	Telecommunications Resellers	NAICS	48	Communications
518112	Web Search Portals (Services, Not Elsewhere Classified)	NAICS	89	Services, Not Elsewhere Classified
518210	Data Processing, Hosting, and Related Services	NAICS	73	Business Services
519120	Libraries and Archives	NAICS	82	Educational Services
519190	All Other Information Services	NAICS	73	Business Services
522110	Commercial Banking	NAICS	60	Depository Institutions
522130	Credit Unions	NAICS	60	Depository Institutions
522190	Other Depository Credit Intermediation	NAICS	60	Depository Institutions
522220	Sales Financing	NAICS	61	Nondepository Institutions

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
522291	Consumer Lending	NAICS	61	Nondepository Institutions
522292	Real Estate Credit	NAICS	61	Nondepository Institutions
522298	All Other Nondepository Credit Intermediation	NAICS	61	Nondepository Institutions
522320	Financial Transactions Processing, Reserve, and Clearinghouse Activities	NAICS	73	Business Services
522390	Other Activities Related to Credit Intermediation	NAICS	61	Nondepository Institutions
523110	Investment Banking and Securities Dealing	NAICS	62	Security & Commodity Brokers
523120	Securities Brokerage	NAICS	62	Security & Commodity Brokers
523910	Miscellaneous Intermediation	NAICS	62	Security & Commodity Brokers
523999	Miscellaneous Financial Investment Activities	NAICS	62	Security & Commodity Brokers
524126	Direct Property and Casualty Insurance Carriers	NAICS	63	Insurance Carriers
524128	Other Direct Insurance (except Life, Health, and Medical) Carriers	NAICS	63	Insurance Carriers
524130	Reinsurance Carriers	NAICS	63	Insurance Carriers
531110	Lessors of Residential Buildings and Dwellings	NAICS	65	Real Estate
531120	Lessors of Nonresidential Buildings (except Miniwarehouses)	NAICS	65	Real Estate
531130	Lessors of Miniwarehouses and Self-Storage Units	NAICS	42	Trucking & Warehousing
531190	Lessors of Other Real Estate Property	NAICS	65	Real Estate
531210	Offices of Real Estate Agents and Brokers	NAICS	65	Real Estate
531311	Residential Property Managers	NAICS	65	Real Estate
531312	Nonresidential Property Managers	NAICS	65	Real Estate
531320	Offices of Real Estate Appraisers	NAICS	65	Real Estate
531390	Other Activities Related to Real Estate	NAICS	65	Real Estate
532120	Truck, Utility Trailer, and RV (Recreational Vehicle) Rental and Leasing	NAICS	75	Auto Repair, Services, & Parking
532210	Consumer Electronics and Appliances Rental	NAICS	73	Business Services
532220	Formal Wear and Costume Rental	NAICS	72	Personal Services
532292	Recreational Goods Rental	NAICS	79	Amusement & Recreation Services
532299	All Other Consumer Goods Rental	NAICS	73	Business Services
532310	General Rental Centers	NAICS	73	Business Services

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
532412	Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing	NAICS	73	Business Services
532420	Office Machinery and Equipment Rental and Leasing	NAICS	73	Business Services
532490	Other Commercial and Industrial Machinery and Equipment Rental and Leasing	NAICS	73	Business Services
541199	All Other Legal Services	NAICS	73	Business Services
541320	Landscape Architectural Services	NAICS	87	Engineering & Management Services
541330	Engineering Services	NAICS	87	Engineering & Management Services
541340	Drafting Services	NAICS	73	Business Services
541350	Building Inspection Services	NAICS	73	Business Services
541370	Surveying and Mapping (except Geophysical) Services	NAICS	73	Business Services
541380	Testing Laboratories	PNC	NA	Independent And Stand Alone Labs
541410	Interior Design Services	NAICS	73	Business Services
541420	Industrial Design Services	NAICS	73	Business Services
541430	Graphic Design Services	PSC	460	Hospital
541490	Other Specialized Design Services	NAICS	73	Business Services
541612	Human Resources Consulting Services	NAICS	89	Services, Not Elsewhere Classified
541614	Process, Physical Distribution, and Logistics Consulting Services	NAICS	47	Transportation Services
541618	Other Management Consulting Services	NAICS	87	Engineering & Management Services
541620	Environmental Consulting Services	NAICS	89	Services, Not Elsewhere Classified
541710	Research and Development in the Physical, Engineering, and Life Sciences	PNC	NA	Independent And Stand Alone Labs
541720	Research and Development in the Social Sciences and Humanities	NAICS	87	Engineering & Management Services
541870	Advertising Material Distribution Services	NAICS	73	Business Services
541922	Commercial Photography	PSC	460	Hospital
541930	Translation and Interpretation Services	NAICS	73	Business Services
551111	Offices of Bank Holding Companies	NAICS	67	Holding & Other Investment Offices
561110	Office Administrative Services	NAICS	87	Engineering & Management Services
561210	Facilities Support Services	NAICS	87	Engineering & Management Services

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
561310	Employment Placement Agencies	NAICS	72	Personal Services
561410	Document Preparation Services	NAICS	73	Business Services
561421	Telephone Answering Services	NAICS	73	Business Services
561422	Telemarketing Bureaus and Other Contact Centers	NAICS	73	Business Services
561431	Private Mail Centers	NAICS	73	Business Services
561439	Other Business Service Centers (including Copy Shops)	NAICS	73	Business Services
561440	Collection Agencies	NAICS	73	Business Services
561491	Repossession Services	NAICS	73	Business Services
561499	All Other Business Support Services	NAICS	73	Business Services
561510	Travel Agencies	NAICS	47	Transportation Services
561591	Convention and Visitors Bureaus	NAICS	73	Business Services
561622	Locksmiths	PSC	442	Transportation Equipment Cleaning
561710	Exterminating and Pest Control Services	NAICS	NA	Sanitary Services
561720	Janitorial Services	PNC	NA	Airport Deicing
561730	Landscaping Services	NAICS	7	Agricultural Services
561910	Packaging and Labeling Services	NAICS	73	Business Services
561920	Convention and Trade Show Organizers	NAICS	73	Business Services
562111	Solid Waste Collection	NAICS	42	Trucking & Warehousing
562112	Hazardous Waste Collection	NAICS	42	Trucking & Warehousing
562119	Other Waste Collection	NAICS	42	Trucking & Warehousing
562211	Hazardous Waste Treatment and Disposal	PSC	437	Centralized Waste Treatment
562211	Hazardous Waste Treatment and Disposal	PSC	444	Waste Combustors
562211	Hazardous Waste Treatment and Disposal	PSC	445	Landfills
562212	Solid Waste Landfill	PSC	445	Landfills
562213	Solid Waste Combustors and Incinerators	PSC	444	Waste Combustors
562219	Other Nonhazardous Waste Treatment and Disposal	PSC	444	Waste Combustors
562219	Other Nonhazardous Waste Treatment and Disposal	PSC	437	Centralized Waste Treatment
562219	Other Nonhazardous Waste Treatment and Disposal	PSC	445	Landfills
562920	Materials Recovery Facilities	PSC	414	Organic Chemicals, Plastics And Synthetic Fibers
611110	Elementary and Secondary Schools	NAICS	82	Educational Services

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
611210	Junior Colleges	NAICS	82	Educational Services
611310	Colleges, Universities, and Professional Schools	NAICS	82	Educational Services
611430	Professional and Management Development Training	NAICS	82	Educational Services
611511	Cosmetology and Barber Schools	NAICS	72	Personal Services
611512	Flight Training	NAICS	82	Educational Services
611513	Apprenticeship Training	NAICS	82	Educational Services
611519	Other Technical and Trade Schools	NAICS	82	Educational Services
611630	Language Schools	NAICS	82	Educational Services
611691	Exam Preparation and Tutoring	NAICS	82	Educational Services
611692	Automobile Driving Schools	NAICS	82	Educational Services
621111	Offices of Physicians (except Mental Health Specialists)	PSC	460	Hospital
621112	Offices of Physicians, Mental Health Specialists	PSC	460	Hospital
621410	Family Planning Centers	PSC	460	Hospital
621491	HMO Medical Centers	PSC	460	Hospital
621492	Kidney Dialysis Centers	PSC	460	Hospital
621493	Freestanding Ambulatory Surgical and Emergency Centers	PSC	460	Hospital
621511	Medical Laboratories	PSC	460	Hospital
621512	Diagnostic Imaging Centers	PSC	460	Hospital
621610	Home Health Care Services	PSC	460	Hospital
621910	Ambulance Services	NAICS	41	Local & Interurban Passenger Transit
621991	Blood and Organ Banks	PSC	460	Hospital
621999	All Other Miscellaneous Ambulatory Health Care Services	PSC	460	Hospital
622110	General Medical and Surgical Hospitals	PSC	460	Hospital
622210	Psychiatric and Substance Abuse Hospitals	PSC	460	Hospital
622310	Specialty (except Psychiatric and Substance Abuse) Hospitals	PSC	460	Hospital
623110	Nursing Care Facilities	PSC	460	Hospital
623220	Residential Mental Health and Substance Abuse Facilities	NAICS	83	Social Services

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
623311	Continuing Care Retirement Communities	PSC	460	Hospital
623312	Homes for the Elderly	NAICS	83	Social Services
623990	Other Residential Care Facilities	NAICS	83	Social Services
624110	Child and Youth Services	NAICS	83	Social Services
624120	Services for the Elderly and Persons with Disabilities	NAICS	83	Social Services
624190	Other Individual and Family Services	NAICS	83	Social Services
624210	Community Food Services	NAICS	83	Social Services
624221	Temporary Shelters	NAICS	83	Social Services
624229	Other Community Housing Services	NAICS	83	Social Services
624230	Emergency and Other Relief Services	NAICS	83	Social Services
624310	Vocational Rehabilitation Services	NAICS	83	Social Services
624410	Child Day Care Services	NAICS	83	Social Services
711110	Theater Companies and Dinner Theaters	PNC	NA	Food Service Establishments
711190	Other Performing Arts Companies	NAICS	79	Amusement & Recreation Services
711211	Sports Teams and Clubs	NAICS	79	Amusement & Recreation Services
711212	Racetracks	NAICS	79	Amusement & Recreation Services
711219	Other Spectator Sports	NAICS	79	Amusement & Recreation Services
712110	Museums	NAICS	84	Museums, Botanical, Zoological Gardens
712120	Historical Sites	NAICS	84	Museums, Botanical, Zoological Gardens
712130	Zoos and Botanical Gardens	NAICS	84	Museums, Botanical, Zoological Gardens
713110	Amusement and Theme Parks	NAICS	79	Amusement & Recreation Services
713210	Casinos (except Casino Hotels)	NAICS	79	Amusement & Recreation Services
713290	Other Gambling Industries	NAICS	79	Amusement & Recreation Services
713910	Golf Courses and Country Clubs	NAICS	79	Amusement & Recreation Services
713920	Skiing Facilities	NAICS	79	Amusement & Recreation Services
713930	Marinas	NAICS	44	Water Transportation
713940	Fitness and Recreational Sports Centers	NAICS	79	Amusement & Recreation Services
713950	Bowling Centers	NAICS	79	Amusement & Recreation Services
713990	All Other Amusement and Recreation Industries	NAICS	79	Amusement & Recreation Services
721110	Hotels (except Casino Hotels) and Motels	NAICS	70	Hotels & Other Lodging Places

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
721120	Casino Hotels	NAICS	70	Hotels & Other Lodging Places
721191	Bed-and-Breakfast Inns	NAICS	70	Hotels & Other Lodging Places
721199	All Other Traveler Accommodation	NAICS	70	Hotels & Other Lodging Places
721211	RV (Recreational Vehicle) Parks and Campgrounds	NAICS	70	Hotels & Other Lodging Places
721214	Recreational and Vacation Camps (except Campgrounds)	NAICS	70	Hotels & Other Lodging Places
721310	Rooming and Boarding Houses	NAICS	70	Hotels & Other Lodging Places
722110	Full-Service Restaurants	PNC	NA	Food Service Establishments
722211	Limited-Service Restaurants	PNC	NA	Food Service Establishments
722212	Cafeterias, Grill Buffets, and Buffets	PNC	NA	Food Service Establishments
722320	Caterers	PNC	NA	Food Service Establishments
722410	Drinking Places (Alcoholic Beverages)	NAICS	58	Eating & Drinking Places
811111	General Automotive Repair	NAICS	75	Auto Repair, Services, & Parking
811118	Other Automotive Mechanical and Electrical Repair and Maintenance	NAICS	75	Auto Repair, Services, & Parking
811121	Automotive Body, Paint, and Interior Repair and Maintenance	NAICS	75	Auto Repair, Services, & Parking
811122	Automotive Glass Replacement Shops	NAICS	75	Auto Repair, Services, & Parking
811191	Automotive Oil Change and Lubrication Shops	NAICS	75	Auto Repair, Services, & Parking
811192	Car Washes	NAICS	75	Auto Repair, Services, & Parking
811198	All Other Automotive Repair and Maintenance	NAICS	75	Auto Repair, Services, & Parking
811213	Communication Equipment Repair and Maintenance	NAICS	76	Miscellaneous Repair Services
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	PSC	433	Metal Finishing
811411	Home and Garden Equipment Repair and Maintenance	PSC	442	Transportation Equipment Cleaning
811420	Reupholstery and Furniture Repair	PNC	NA	Airport Deicing
811430	Footwear and Leather Goods Repair	PSC	442	Transportation Equipment Cleaning
812112	Beauty Salons	NAICS	72	Personal Services
812113	Nail Salons	NAICS	72	Personal Services
812191	Diet and Weight Reducing Centers	NAICS	72	Personal Services

**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
812199	Other Personal Care Services	NAICS	72	Personal Services
812210	Funeral Homes and Funeral Services	NAICS	72	Personal Services
812310	Coin-Operated Laundries and Drycleaners	NAICS	72	Personal Services
812332	Industrial Launderers	PNC	NA	Industrial Laundries
812910	Pet Care (except Veterinary) Services	NAICS	7	Agricultural Services
813110	Religious Organizations	NAICS	86	Membership Organizations
813211	Grantmaking Foundations	NAICS	67	Holding & Other Investment Offices
813312	Environment, Conservation and Wildlife Organizations	NAICS	86	Membership Organizations
813319	Other Social Advocacy Organizations	NAICS	86	Membership Organizations
813410	Civic and Social Organizations	NAICS	86	Membership Organizations
813910	Business Associations	NAICS	86	Membership Organizations
813920	Professional Organizations	NAICS	86	Membership Organizations
813930	Labor Unions and Similar Labor Organizations	NAICS	86	Membership Organizations
814110	Private Households	NAICS	88	Private Households
921110	Executive Offices	NAICS	91	Executive, Legislative, & General
921140	Executive and Legislative Offices, Combined	NAICS	91	Executive, Legislative, & General
921150	American Indian and Alaska Native Tribal Governments	NAICS	86	Membership Organizations
921190	Other General Government Support	NAICS	91	Executive, Legislative, & General
922110	Courts	NAICS	92	Justice, Public Order, & Safety
922130	Legal Counsel and Prosecution	NAICS	92	Justice, Public Order, & Safety
922140	Correctional Institutions	NAICS	92	Justice, Public Order, & Safety
922150	Parole Offices and Probation Offices	NAICS	83	Social Services
922160	Fire Protection	NAICS	92	Justice, Public Order, & Safety
922190	Other Justice, Public Order, and Safety Activities	NAICS	92	Justice, Public Order, & Safety
923120	Administration of Public Health Programs	NAICS	94	Administration Of Human Resources
924110	Administration of Air and Water Resource and Solid Waste Management Programs	NAICS	95	Environmental Quality & Housing
924120	Administration of Conservation Programs	NAICS	95	Environmental Quality & Housing
925110	Administration of Housing Programs	NAICS	95	Environmental Quality & Housing



**Table C-3. NAICS/Point Source Category Crosswalk**

NAICS Code	NAICS Description	Type of Grouping	40 CFR Part or NAICS Group	Point Source Category
926110	Administration of General Economic Programs	NAICS	96	Administration Of Economic Programs
926120	Regulation and Administration of Transportation Programs	NAICS	96	Administration Of Economic Programs
926140	Regulation of Agricultural Marketing and Commodities	NAICS	96	Administration Of Economic Programs
927110	Space Research and Technology	NAICS	96	Administration Of Economic Programs
928110	National Security	NAICS	97	National Security & International Affairs

PSC – Point Source Category.

PNC – Potential new category.

PNS – Potential new subcategory.

**Table C-4. NAICS Codes Not Assigned to a Point Source Category**

NAICS Code	NAICS Description	Major NAICS Group	Point Source Category
111110	Soybean Farming	1	Agricultural Production - Crops
111331	Apple Orchards	1	Agricultural Production - Crops
111339	Other Noncitrus Fruit Farming	1	Agricultural Production - Crops
111411	Mushroom Production	1	Agricultural Production - Crops
111419	Other Food Crops Grown Under Cover	1	Agricultural Production - Crops
111421	Nursery and Tree Production	1	Agricultural Production - Crops
111422	Floriculture Production	1	Agricultural Production - Crops
111930	Sugarcane Farming	1	Agricultural Production - Crops
111991	Sugar Beet Farming	1	Agricultural Production - Crops
112910	Apiculture	2	Agricultural Production - Livestock
113310	Logging	24	Lumber & Wood Products
114111	Finfish Fishing	9	Fishing, Hunting, & Trapping
114112	Shellfish Fishing	9	Fishing, Hunting, & Trapping
115112	Soil Preparation, Planting, and Cultivating	7	Agricultural Services
115114	Postharvest Crop Activities (except Cotton Ginning)	7	Agricultural Services
115310	Support Activities for Forestry	8	Forestry
213113	Support Activities for Coal Mining	12	Coal Mining
221320	Sewage Treatment Facilities	NA	Sewerage Systems
236117	New Housing Operative Builders	15	General Building Contractors
237210	Land Subdivision	65	Real Estate
238110	Poured Concrete Foundation and Structure Contractors	17	Special Trade Contractors
238140	Masonry Contractors	17	Special Trade Contractors
238150	Glass and Glazing Contractors	17	Special Trade Contractors
238190	Other Foundation, Structure, and Building Exterior Contractors	17	Special Trade Contractors
238210	Electrical Contractors and Other Wiring Installation Contractors	17	Special Trade Contractors
238290	Other Building Equipment Contractors	17	Special Trade Contractors
238320	Painting and Wall Covering Contractors	17	Special Trade Contractors

**Table C-4. NAICS Codes Not Assigned to a Point Source Category**

NAICS Code	NAICS Description	Major NAICS Group	Point Source Category
238350	Finish Carpentry Contractors	17	Special Trade Contractors
238390	Other Building Finishing Contractors	17	Special Trade Contractors
238990	All Other Specialty Trade Contractors	17	Special Trade Contractors
311119	Other Animal Food Manufacturing	20	Food & Kindred Products
311811	Retail Bakeries	54	Food Stores
314129	Other Household Textile Product Mills	23	Apparel & Other Textile Products
314911	Textile Bag Mills	23	Apparel & Other Textile Products
315223	Men's and Boys' Cut and Sew Shirt (except Work Shirt) Manufacturing	23	Apparel & Other Textile Products
315231	Women's and Girls' Cut and Sew Lingerie, Loungewear, and Nightwear Manufacturing	23	Apparel & Other Textile Products
315992AP	Glove and Mitten Manufacturing (Apparel & Other Textile Products)	23	Apparel & Other Textile Products
316213	Men's Footwear (except Athletic) Manufacturing	31	Leather & Leather Products
316219	Other Footwear Manufacturing	31	Leather & Leather Products
321991	Manufactured Home (Mobile Home) Manufacturing	24	Lumber & Wood Products
321992	Prefabricated Wood Building Manufacturing	24	Lumber & Wood Products
322223	Coated Paper Bag and Pouch Manufacturing	26	Paper & Allied Products
322226	Surface-Coated Paperboard Manufacturing	26	Paper & Allied Products
325998BS	All Other Miscellaneous Chemical Product and Preparation Manufacturing (Business Services)	73	Business Services
327991	Cut Stone and Stone Product Manufacturing	32	Stone, Clay, & Glass Products
339944	Carbon Paper and Inked Ribbon Manufacturing	39	Misc. Manuf. Industries
423110	Automobile and Other Motor Vehicle Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423120	Motor Vehicle Supplies and New Parts Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423140	Motor Vehicle Parts (Used) Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423310	Lumber, Plywood, Millwork, and Wood Panel Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423450	Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers	50	Wholesale Trade- Durable Goods

**Table C-4. NAICS Codes Not Assigned to a Point Source Category**

<b>NAICS Code</b>	<b>NAICS Description</b>	<b>Major NAICS Group</b>	<b>Point Source Category</b>
423510	Metal Service Centers and Other Metal Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423520	Coal and Other Mineral and Ore Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423620	Electrical and Electronic Appliance, Television, and Radio Set Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423690	Other Electronic Parts and Equipment Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423810	Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423830	Industrial Machinery and Equipment Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423840	Industrial Supplies Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423860	Transportation Equipment and Supplies (except Motor Vehicle) Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423910	Sporting and Recreational Goods and Supplies Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423920	Toy and Hobby Goods and Supplies Merchant Wholesalers	50	Wholesale Trade- Durable Goods
423930	Recyclable Material Merchant Wholesalers	50	Wholesale Trade- Durable Goods
424210	Drugs and Druggists' Sundries Merchant Wholesalers	51	Wholesale Trade- Nondurable Goods
424310	Piece Goods, Notions, and Other Dry Goods Merchant Wholesalers	51	Wholesale Trade- Nondurable Goods
424340	Footwear Merchant Wholesalers	51	Wholesale Trade- Nondurable Goods
424410	General Line Grocery Merchant Wholesalers	51	Wholesale Trade- Nondurable Goods
424430	Dairy Product (except Dried or Canned) Merchant Wholesalers	51	Wholesale Trade- Nondurable Goods
424460	Fish and Seafood Merchant Wholesalers	51	Wholesale Trade- Nondurable Goods
424490	Other Grocery and Related Products Merchant Wholesalers	51	Wholesale Trade- Nondurable Goods
424510	Grain and Field Bean Merchant Wholesalers	51	Wholesale Trade- Nondurable Goods
424610	Plastics Materials and Basic Forms and Shapes Merchant Wholesalers	51	Wholesale Trade- Nondurable Goods
424720	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)	51	Wholesale Trade- Nondurable Goods
424910	Farm Supplies Merchant Wholesalers	51	Wholesale Trade- Nondurable Goods
424920	Book, Periodical, and Newspaper Merchant Wholesalers	51	Wholesale Trade- Nondurable Goods

**Table C-4. NAICS Codes Not Assigned to a Point Source Category**

NAICS Code	NAICS Description	Major NAICS Group	Point Source Category
424990	Other Miscellaneous Nondurable Goods Merchant Wholesalers	51	Wholesale Trade- Nondurable Goods
441110	New Car Dealers	55	Automotive Dealers & Service Stations
441221	Motorcycle, ATV, and Personal Watercraft Dealers	55	Automotive Dealers & Service Stations
441222	Boat Dealers	55	Automotive Dealers & Service Stations
441229	All Other Motor Vehicle Dealers	55	Automotive Dealers & Service Stations
441320	Tire Dealers	55	Automotive Dealers & Service Stations
442291	Window Treatment Stores	57	Furniture & Homefurnishings Stores
444110	Home Centers	50	Wholesale Trade- Durable Goods
445120	Convenience Stores	54	Food Stores
445220	Fish and Seafood Markets	51	Wholesale Trade- Nondurable Goods
445230	Fruit and Vegetable Markets	54	Food Stores
445291	Baked Goods Stores	54	Food Stores
445292	Confectionery and Nut Stores	54	Food Stores
445299	All Other Specialty Food Stores	51	Wholesale Trade- Nondurable Goods
446110	Pharmacies and Drug Stores	51	Wholesale Trade- Nondurable Goods
446130	Optical Goods Stores	59	Miscellaneous Retail
446191	Food (Health) Supplement Stores	51	Wholesale Trade- Nondurable Goods
447190	Other Gasoline Stations	55	Automotive Dealers & Service Stations
451120	Hobby, Toy, and Game Stores	50	Wholesale Trade- Durable Goods
451211	Book Stores	51	Wholesale Trade- Nondurable Goods
452111	Department Stores (except Discount Department Stores)	53	General Merchandise Stores
452112	Discount Department Stores	53	General Merchandise Stores
452910	Warehouse Clubs and Supercenters	54	Food Stores
453220	Gift, Novelty, and Souvenir Stores	51	Wholesale Trade- Nondurable Goods
453920	Art Dealers	59	Miscellaneous Retail
453930	Manufactured (Mobile) Home Dealers	52	Building Materials & Gardening Supplies
453991	Tobacco Stores	51	Wholesale Trade- Nondurable Goods
454319	Other Fuel Dealers	59	Miscellaneous Retail
454390	Other Direct Selling Establishments	54	Food Stores

**Table C-4. NAICS Codes Not Assigned to a Point Source Category**

NAICS Code	NAICS Description	Major NAICS Group	Point Source Category
481111	Scheduled Passenger Air Transportation	45	Transportation By Air
481112	Scheduled Freight Air Transportation	45	Transportation By Air
481219	Other Nonscheduled Air Transportation	79	Amusement & Recreation Services
483111	Deep Sea Freight Transportation	44	Water Transportation
484110	General Freight Trucking, Local	42	Trucking & Warehousing
484121	General Freight Trucking, Long-Distance, Truckload	42	Trucking & Warehousing
484122	General Freight Trucking, Long-Distance, Less Than Truckload	42	Trucking & Warehousing
484210	Used Household and Office Goods Moving	42	Trucking & Warehousing
484220	Specialized Freight (except Used Goods) Trucking, Local	42	Trucking & Warehousing
484230	Specialized Freight (except Used Goods) Trucking, Long-Distance	42	Trucking & Warehousing
485111	Mixed Mode Transit Systems	41	Local & Interurban Passenger Transit
485112	Commuter Rail Systems	41	Local & Interurban Passenger Transit
485113	Bus and Other Motor Vehicle Transit Systems	41	Local & Interurban Passenger Transit
485119	Other Urban Transit Systems	41	Local & Interurban Passenger Transit
485320	Limousine Service	41	Local & Interurban Passenger Transit
485410	School and Employee Bus Transportation	41	Local & Interurban Passenger Transit
485991	Special Needs Transportation	41	Local & Interurban Passenger Transit
485999	All Other Transit and Ground Passenger Transportation	41	Local & Interurban Passenger Transit
486210	Pipeline Transportation of Natural Gas	49	Electric, Gas, & Sanitary Services
486910	Pipeline Transportation of Refined Petroleum Products	46	Pipelines, Except Natural Gas
486990	All Other Pipeline Transportation	46	Pipelines, Except Natural Gas
487210	Scenic and Sightseeing Transportation, Water	79	Amusement & Recreation Services
487990	Scenic and Sightseeing Transportation, Other	79	Amusement & Recreation Services
488410	Motor Vehicle Towing	75	Auto Repair, Services, & Parking
488510	Freight Transportation Arrangement	47	Transportation Services
488991	Packing and Crating	47	Transportation Services
488999	All Other Support Activities for Transportation	47	Transportation Services
492210	Local Messengers and Local Delivery	42	Trucking & Warehousing

**Table C-4. NAICS Codes Not Assigned to a Point Source Category**

NAICS Code	NAICS Description	Major NAICS Group	Point Source Category
493110	General Warehousing and Storage	42	Trucking & Warehousing
493120	Refrigerated Warehousing and Storage	42	Trucking & Warehousing
493130	Farm Product Warehousing and Storage	42	Trucking & Warehousing
493190	Other Warehousing and Storage	42	Trucking & Warehousing
512210	Record Production	89	Services, Not Elsewhere Classified
512240	Sound Recording Studios	73	Business Services
512290	Other Sound Recording Industries	73	Business Services
515111	Radio Networks	48	Communications
515112	Radio Stations	48	Communications
517110	Wired Telecommunications Carriers	48	Communications
517211	Paging Network	48	Communications
517212	Cellular and Other Wireless Telecommunications	48	Communications
517310	Telecommunications Resellers	48	Communications
518112	Web Search Portals (Services, Not Elsewhere Classified)	89	Services, Not Elsewhere Classified
518210	Data Processing, Hosting, and Related Services	73	Business Services
519120	Libraries and Archives	82	Educational Services
519190	All Other Information Services	73	Business Services
522110	Commercial Banking	60	Depository Institutions
522130	Credit Unions	60	Depository Institutions
522190	Other Depository Credit Intermediation	60	Depository Institutions
522220	Sales Financing	61	Nondepository Institutions
522291	Consumer Lending	61	Nondepository Institutions
522292	Real Estate Credit	61	Nondepository Institutions
522298	All Other Nondepository Credit Intermediation	61	Nondepository Institutions
522320	Financial Transactions Processing, Reserve, and Clearinghouse Activities	73	Business Services
522390	Other Activities Related to Credit Intermediation	61	Nondepository Institutions
523110	Investment Banking and Securities Dealing	62	Security & Commodity Brokers
523120	Securities Brokerage	62	Security & Commodity Brokers
523910	Miscellaneous Intermediation	62	Security & Commodity Brokers

**Table C-4. NAICS Codes Not Assigned to a Point Source Category**

NAICS Code	NAICS Description	Major NAICS Group	Point Source Category
523999	Miscellaneous Financial Investment Activities	62	Security & Commodity Brokers
524126	Direct Property and Casualty Insurance Carriers	63	Insurance Carriers
524128	Other Direct Insurance (except Life, Health, and Medical) Carriers	63	Insurance Carriers
524130	Reinsurance Carriers	63	Insurance Carriers
531110	Lessors of Residential Buildings and Dwellings	65	Real Estate
531120	Lessors of Nonresidential Buildings (except Miniwarehouses)	65	Real Estate
531130	Lessors of Miniwarehouses and Self-Storage Units	42	Trucking & Warehousing
531190	Lessors of Other Real Estate Property	65	Real Estate
531210	Offices of Real Estate Agents and Brokers	65	Real Estate
531311	Residential Property Managers	65	Real Estate
531312	Nonresidential Property Managers	65	Real Estate
531320	Offices of Real Estate Appraisers	65	Real Estate
531390	Other Activities Related to Real Estate	65	Real Estate
532120	Truck, Utility Trailer, and RV (Recreational Vehicle) Rental and Leasing	75	Auto Repair, Services, & Parking
532210	Consumer Electronics and Appliances Rental	73	Business Services
532220	Formal Wear and Costume Rental	72	Personal Services
532292	Recreational Goods Rental	79	Amusement & Recreation Services
532299	All Other Consumer Goods Rental	73	Business Services
532310	General Rental Centers	73	Business Services
532412	Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing	73	Business Services
532420	Office Machinery and Equipment Rental and Leasing	73	Business Services
532490	Other Commercial and Industrial Machinery and Equipment Rental and Leasing	73	Business Services
541199	All Other Legal Services	73	Business Services
541320	Landscape Architectural Services	87	Engineering & Management Services
541330	Engineering Services	87	Engineering & Management Services
541340	Drafting Services	73	Business Services



**Table C-4. NAICS Codes Not Assigned to a Point Source Category**

NAICS Code	NAICS Description	Major NAICS Group	Point Source Category
541350	Building Inspection Services	73	Business Services
541370	Surveying and Mapping (except Geophysical) Services	73	Business Services
541410	Interior Design Services	73	Business Services
541420	Industrial Design Services	73	Business Services
541490	Other Specialized Design Services	73	Business Services
541612	Human Resources Consulting Services	89	Services, Not Elsewhere Classified
541614	Process, Physical Distribution, and Logistics Consulting Services	47	Transportation Services
541618	Other Management Consulting Services	87	Engineering & Management Services
541620	Environmental Consulting Services	89	Services, Not Elsewhere Classified
541720	Research and Development in the Social Sciences and Humanities	87	Engineering & Management Services
541870	Advertising Material Distribution Services	73	Business Services
541930	Translation and Interpretation Services	73	Business Services
551111	Offices of Bank Holding Companies	67	Holding & Other Investment Offices
561110	Office Administrative Services	87	Engineering & Management Services
561210	Facilities Support Services	87	Engineering & Management Services
561310	Employment Placement Agencies	72	Personal Services
561410	Document Preparation Services	73	Business Services
561421	Telephone Answering Services	73	Business Services
561422	Telemarketing Bureaus and Other Contact Centers	73	Business Services
561431	Private Mail Centers	73	Business Services
561439	Other Business Service Centers (including Copy Shops)	73	Business Services
561440	Collection Agencies	73	Business Services
561491	Repossession Services	73	Business Services
561499	All Other Business Support Services	73	Business Services
561510	Travel Agencies	47	Transportation Services
561591	Convention and Visitors Bureaus	73	Business Services
561710	Exterminating and Pest Control Services	NA	Sanitary Services
561730	Landscaping Services	7	Agricultural Services

**Table C-4. NAICS Codes Not Assigned to a Point Source Category**

NAICS Code	NAICS Description	Major NAICS Group	Point Source Category
561910	Packaging and Labeling Services	73	Business Services
561920	Convention and Trade Show Organizers	73	Business Services
562111	Solid Waste Collection	42	Trucking & Warehousing
562112	Hazardous Waste Collection	42	Trucking & Warehousing
562119	Other Waste Collection	42	Trucking & Warehousing
611110	Elementary and Secondary Schools	82	Educational Services
611210	Junior Colleges	82	Educational Services
611310	Colleges, Universities, and Professional Schools	82	Educational Services
611430	Professional and Management Development Training	82	Educational Services
611511	Cosmetology and Barber Schools	72	Personal Services
611512	Flight Training	82	Educational Services
611513	Apprenticeship Training	82	Educational Services
611519	Other Technical and Trade Schools	82	Educational Services
611630	Language Schools	82	Educational Services
611691	Exam Preparation and Tutoring	82	Educational Services
611692	Automobile Driving Schools	82	Educational Services
621910	Ambulance Services	41	Local & Interurban Passenger Transit
623220	Residential Mental Health and Substance Abuse Facilities	83	Social Services
623312	Homes for the Elderly	83	Social Services
623990	Other Residential Care Facilities	83	Social Services
624110	Child and Youth Services	83	Social Services
624120	Services for the Elderly and Persons with Disabilities	83	Social Services
624190	Other Individual and Family Services	83	Social Services
624210	Community Food Services	83	Social Services
624221	Temporary Shelters	83	Social Services
624229	Other Community Housing Services	83	Social Services
624230	Emergency and Other Relief Services	83	Social Services
624310	Vocational Rehabilitation Services	83	Social Services
624410	Child Day Care Services	83	Social Services
711190	Other Performing Arts Companies	79	Amusement & Recreation Services

**Table C-4. NAICS Codes Not Assigned to a Point Source Category**

NAICS Code	NAICS Description	Major NAICS Group	Point Source Category
711211	Sports Teams and Clubs	79	Amusement & Recreation Services
711212	Racetracks	79	Amusement & Recreation Services
711219	Other Spectator Sports	79	Amusement & Recreation Services
712110	Museums	84	Museums, Botanical, Zoological Gardens
712120	Historical Sites	84	Museums, Botanical, Zoological Gardens
712130	Zoos and Botanical Gardens	84	Museums, Botanical, Zoological Gardens
713110	Amusement and Theme Parks	79	Amusement & Recreation Services
713210	Casinos (except Casino Hotels)	79	Amusement & Recreation Services
713290	Other Gambling Industries	79	Amusement & Recreation Services
713910	Golf Courses and Country Clubs	79	Amusement & Recreation Services
713920	Skiing Facilities	79	Amusement & Recreation Services
713930	Marinas	44	Water Transportation
713940	Fitness and Recreational Sports Centers	79	Amusement & Recreation Services
713950	Bowling Centers	79	Amusement & Recreation Services
713990	All Other Amusement and Recreation Industries	79	Amusement & Recreation Services
721110	Hotels (except Casino Hotels) and Motels	70	Hotels & Other Lodging Places
721120	Casino Hotels	70	Hotels & Other Lodging Places
721191	Bed-and-Breakfast Inns	70	Hotels & Other Lodging Places
721199	All Other Traveler Accommodation	70	Hotels & Other Lodging Places
721211	RV (Recreational Vehicle) Parks and Campgrounds	70	Hotels & Other Lodging Places
721214	Recreational and Vacation Camps (except Campgrounds)	70	Hotels & Other Lodging Places
721310	Rooming and Boarding Houses	70	Hotels & Other Lodging Places
722410	Drinking Places (Alcoholic Beverages)	58	Eating & Drinking Places
811111	General Automotive Repair	75	Auto Repair, Services, & Parking
811118	Other Automotive Mechanical and Electrical Repair and Maintenance	75	Auto Repair, Services, & Parking
811121	Automotive Body, Paint, and Interior Repair and Maintenance	75	Auto Repair, Services, & Parking
811122	Automotive Glass Replacement Shops	75	Auto Repair, Services, & Parking
811191	Automotive Oil Change and Lubrication Shops	75	Auto Repair, Services, & Parking

**Table C-4. NAICS Codes Not Assigned to a Point Source Category**

NAICS Code	NAICS Description	Major NAICS Group	Point Source Category
811192	Car Washes	75	Auto Repair, Services, & Parking
811198	All Other Automotive Repair and Maintenance	75	Auto Repair, Services, & Parking
811213	Communication Equipment Repair and Maintenance	76	Miscellaneous Repair Services
812112	Beauty Salons	72	Personal Services
812113	Nail Salons	72	Personal Services
812191	Diet and Weight Reducing Centers	72	Personal Services
812199	Other Personal Care Services	72	Personal Services
812210	Funeral Homes and Funeral Services	72	Personal Services
812310	Coin-Operated Laundries and Drycleaners	72	Personal Services
812910	Pet Care (except Veterinary) Services	7	Agricultural Services
813110	Religious Organizations	86	Membership Organizations
813211	Grantmaking Foundations	67	Holding & Other Investment Offices
813312	Environment, Conservation and Wildlife Organizations	86	Membership Organizations
813319	Other Social Advocacy Organizations	86	Membership Organizations
813410	Civic and Social Organizations	86	Membership Organizations
813910	Business Associations	86	Membership Organizations
813920	Professional Organizations	86	Membership Organizations
813930	Labor Unions and Similar Labor Organizations	86	Membership Organizations
814110	Private Households	88	Private Households
921110	Executive Offices	91	Executive, Legislative, & General
921140	Executive and Legislative Offices, Combined	91	Executive, Legislative, & General
921150	American Indian and Alaska Native Tribal Governments	86	Membership Organizations
921190	Other General Government Support	91	Executive, Legislative, & General
922110	Courts	92	Justice, Public Order, & Safety
922130	Legal Counsel and Prosecution	92	Justice, Public Order, & Safety
922140	Correctional Institutions	92	Justice, Public Order, & Safety
922150	Parole Offices and Probation Offices	83	Social Services
922160	Fire Protection	92	Justice, Public Order, & Safety
922190	Other Justice, Public Order, and Safety Activities	92	Justice, Public Order, & Safety
923120	Administration of Public Health Programs	94	Administration Of Human Resources

**Table C-4. NAICS Codes Not Assigned to a Point Source Category**

NAICS Code	NAICS Description	Major NAICS Group	Point Source Category
924110	Administration of Air and Water Resource and Solid Waste Management Programs	95	Environmental Quality & Housing
924120	Administration of Conservation Programs	95	Environmental Quality & Housing
925110	Administration of Housing Programs	95	Environmental Quality & Housing
926110	Administration of General Economic Programs	96	Administration Of Economic Programs
926120	Regulation and Administration of Transportation Programs	96	Administration Of Economic Programs
926140	Regulation of Agricultural Marketing and Commodities	96	Administration Of Economic Programs
927110	Space Research and Technology	96	Administration Of Economic Programs
928110	National Security	97	National Security & International Affairs

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## **APPENDIX D**

### **SUPPLEMENTAL MATERIALS FOR THE DEVELOPMENT OF *TRILTOutput2013* AND *DMRLTOutput2013***

Table D-1: Corrections Made to the 2013 DMR Data (*DMRLTOutput2013*)

Table D-2: Corrections Made to the 2013 TRI Data (*TRILTOutput2013*)

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**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3_304M	AL0071285	EQUITY GROUP EUFAULA DIVISION LLC	BAKERHILL	AL	01A	1	01027	31-DEC-13	2.8	0.0028
MC3_304M	AL0071285	EQUITY GROUP EUFAULA DIVISION LLC	BAKERHILL	AL	01A	1	01042	31-DEC-13	4.7	0.0047
MC3_304M	AL0071285	EQUITY GROUP EUFAULA DIVISION LLC	BAKERHILL	AL	01A	1	01067	31-DEC-13	27.2	0.0272
MC3_304M	AL0071285	EQUITY GROUP EUFAULA DIVISION LLC	BAKERHILL	AL	01A	1	01092	31-DEC-13	10.4	0.0104
MC3	AL0080233	THYSSENKRUPP STAINLESS USA	CALVERT	AL	009	1	71900	31-DEC-13	11	0.000011
MC3	ALG180621	H AND R METAL RECYCLING	HALEYVILLE	AL	002	1	71900	31-DEC-13	9	0.000009
MC3	CA0004863	CONTRA COSTA GENERATING STATION	ANTIOCH	CA	001	1	71901	30-JUN-13	3.415	0.000003415
MC3	CA0048127	LOMPOC WASTEWATER PLANT	LOMPOC	CA	001	1	34675	31-DEC-13	0.00484	4.84E-09
MC3	CA0053597	CAMARILLO SANITARY DIST WATER RECLAMATION PLANT	CAMARILLO	CA	01A	1	03818	30-JUN-13	0.00154	1.54E-09
MC3	CA0053597	CAMARILLO SANITARY DIST WATER RECLAMATION PLANT	CAMARILLO	CA	01A	1	03818	31-MAR-13	0.00231	2.31E-09
MC3	CA0053716	WHITTIER NARROWS WATER RECLAMATION PLANT	SOUTH EL MONTE	CA	001	1	34675	30-JUN-13	0.015	0.000000015
MC3	CA0053716	WHITTIER NARROWS WATER RECLAMATION PLANT	SOUTH EL MONTE	CA	002	1	34675	30-JUN-13	0.015	0.000000015
MC3	CA0053716	WHITTIER NARROWS WATER RECLAMATION PLANT	SOUTH EL MONTE	CA	004	1	34675	30-JUN-13	0.015	0.000000015
MC3	CA0079189	VISALIA WASTEWATER TREATMENT PLANT	VISALIA	CA	001	1	03818	31-DEC-13	0.0084	8.4E-09
MC3	CA0079189	VISALIA WASTEWATER TREATMENT PLANT	VISALIA	CA	001	1	30344	31-DEC-13	0.054	0.000000054
MC3	CA0079189	VISALIA WASTEWATER TREATMENT PLANT	VISALIA	CA	001	1	30345	31-DEC-13	0.054	0.000000054
MC3	CA0079189	VISALIA WASTEWATER TREATMENT PLANT	VISALIA	CA	001	1	30346	31-DEC-13	0.054	0.000000054
MC3	CA0079189	VISALIA WASTEWATER TREATMENT PLANT	VISALIA	CA	001	1	30347	31-DEC-13	0.054	0.000000054

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3	CA0079189	VISALIA WASTEWATER TREATMENT PLANT	VISALIA	CA	001	1	30358	31-DEC-13	0.054	0.000000054
MC3	CA0079189	VISALIA WASTEWATER TREATMENT PLANT	VISALIA	CA	001	1	34675	31-DEC-13	0.011	0.000000011
MC3	CA0079189	VISALIA WASTEWATER TREATMENT PLANT	VISALIA	CA	001	1	38691	31-DEC-13	0.011	0.000000011
MC3	CT0024694	EAST HAMPTON WATER POLLUTION CONTROL FACILITY	EAST HAMPTON	CT	001	S	78471	30-JUN-13	1.06	0.00000106
MC3	CT0024694	EAST HAMPTON WATER POLLUTION CONTROL FACILITY	EAST HAMPTON	CT	001	S	78471	30-SEP-13	1.38	0.00000138
MC3	CT0024694	EAST HAMPTON WATER POLLUTION CONTROL FACILITY	EAST HAMPTON	CT	001	S	78471	31-DEC-13	1.02	0.00000102
MC3	CT0024694	EAST HAMPTON WATER POLLUTION CONTROL FACILITY	EAST HAMPTON	CT	001	S	78471	31-MAR-13	1.23	0.00000123
MC3	CT0024759	PL 612 WHEELERS FARMS LIMITED	MILFORD	CT	001	S	78471	31-DEC-13	1.41	0.00000141
MC3	CT0100056	WESTSIDE WATER POLLUTION CONTROL FACILITY	BRIDGEPORT	CT	001	S	78471	31-MAY-13	1.27	0.00000127
MC3	CT0100056	WESTSIDE WATER POLLUTION CONTROL FACILITY	BRIDGEPORT	CT	001	SL	78471	30-NOV-13	1.67	0.00000167
MC3	CT0100056	WESTSIDE WATER POLLUTION CONTROL FACILITY	BRIDGEPORT	CT	001	SL	78471	31-JUL-13	1.69	0.00000169
MC3	CT0100081	CHESHIRE, WATER POLLUTION CONTROL FACILITY	CHESHIRE	CT	001	SL	78471	31-DEC-13	1.76	0.00000176
MC3	CT0100145	DANBURY WATER POLLUTION CONTROL FACILITY	DANBURY	CT	001	S	78471	30-NOV-13	1.27	0.00000127
MC3	CT0100145	DANBURY WATER POLLUTION CONTROL FACILITY	DANBURY	CT	001	S	78471	31-JUL-13	1.15	0.00000115
MC3	CT0100145	DANBURY WATER POLLUTION CONTROL FACILITY	DANBURY	CT	001	S	78471	31-MAY-13	1.39	0.00000139
MC3	CT0100218	FARMINGTON WPCF	FARMINGTON	CT	001	S	78471	31-DEC-13	2.77	0.00000277



**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3	CT0100226	GLASTONBURY WATER POLLUTION CONTROL FACILITY	GLASTONBURY	CT	001	SL	78471	31-MAY-13	1.29	0.00000129
MC3	CT0100234	GREENWICH WPCF	GREENWICH	CT	001	S	78471	31-JAN-13	3.78	0.00000378
MC3	CT0100251	HARTFORD WATER POLLUTION CONTROL FACILITY	HARTFORD	CT	001	S	78471	30-NOV-13	1.09	0.00000109
MC3	CT0100251	HARTFORD WATER POLLUTION CONTROL FACILITY	HARTFORD	CT	001	S	78471	30-SEP-13	2.12	0.00000212
MC3	CT0100251	HARTFORD WATER POLLUTION CONTROL FACILITY	HARTFORD	CT	001	S	78471	31-DEC-13	1.95	0.00000195
MC3	CT0100269	JEWETT CITY WATER POLLUTION CONTROL PLANT	JEWETT CITY	CT	001	S	78471	30-JUN-13	4.1	0.0000041
MC3	CT0100269	JEWETT CITY WATER POLLUTION CONTROL PLANT	JEWETT CITY	CT	001	S	78471	30-SEP-13	2.9	0.0000029
MC3	CT0100293	HOCKANUM RIVER WATER POLLUTION CONTROL FACILITY	MANCHESTER	CT	001	SL	78471	30-NOV-13	1	0.000001
MC3	CT0100293	HOCKANUM RIVER WATER POLLUTION CONTROL FACILITY	MANCHESTER	CT	001	SL	78471	30-SEP-13	1.19	0.00000119
MC3	CT0100293	HOCKANUM RIVER WATER POLLUTION CONTROL FACILITY	MANCHESTER	CT	001	SL	78471	31-JAN-13	1.05	0.00000105
MC3	CT0100293	HOCKANUM RIVER WATER POLLUTION CONTROL FACILITY	MANCHESTER	CT	001	SL	78471	31-JUL-13	1.25	0.00000125
MC3	CT0100293	HOCKANUM RIVER WATER POLLUTION CONTROL FACILITY	MANCHESTER	CT	001	SL	78471	31-MAR-13	1.18	0.00000118
MC3	CT0100293	HOCKANUM RIVER WATER POLLUTION CONTROL FACILITY	MANCHESTER	CT	001	SL	78471	31-MAY-13	1.68	0.00000168
MC3	CT0100331	NEW HARTFORD WPCF	NEW HARTFORD	CT	001	S	78471	31-AUG-13	2.71	0.00000271

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3	CT0100391	NEW MILFORD WATER POLLUTION CONTROL FACILITY	NEW MILFORD	CT	001	SL	78471	30-NOV-13	1.41	0.00000141
MC3	CT0100391	NEW MILFORD WATER POLLUTION CONTROL FACILITY	NEW MILFORD	CT	001	SL	78471	31-AUG-13	1.32	0.00000132
MC3	CT0100391	NEW MILFORD WATER POLLUTION CONTROL FACILITY	NEW MILFORD	CT	001	SL	78471	31-MAY-13	1.25	0.00000125
MC3	CT0100455	PLAINVILLE WPCF	PLAINVILLE	CT	001	S	78471	31-OCT-13	2.8	0.0000028
MC3	CT0100480	ROCKY HILL WATER POLLUTION CONTROL FACILITY	ROCKY HILL	CT	001	S	78471	31-OCT-13	1.34	0.00000134
MC3	CT0100498	TOWN OF SALISBURY WPCF	SALISBURY	CT	001	S	78471	31-DEC-13	1.8	0.0000018
MC3	CT0100528	SOUTHBURY TRAINING SCHOOL	SOUTHBURY	CT	001	S	78471	30-APR-13	11.1	0.0000111
MC3	CT0100528	SOUTHBURY TRAINING SCHOOL	SOUTHBURY	CT	001	S	78471	31-JAN-13	8.13	0.00000813
MC3	CT0100609	VERNON WPCF	VERNON	CT	001	S	78471	30-SEP-13	2.35	0.00000235
MC3	CT0100609	VERNON WPCF	VERNON	CT	001	S	78471	31-MAR-13	1.08	0.00000108
MC3	CT0100609	VERNON WPCF	VERNON	CT	001	S	78471	31-MAY-13	3.86	0.00000386
MC3	CT0100617	WALLINGFORD WATER POLLUTION CONTROL FACILITY	WALLINGFORD	CT	001	S	78471	30-APR-13	1.65	0.00000165
MC3	CT0100617	WALLINGFORD WATER POLLUTION CONTROL FACILITY	WALLINGFORD	CT	001	S	78471	30-JUN-13	1.25	0.00000125
MC3	CT0100617	WALLINGFORD WATER POLLUTION CONTROL FACILITY	WALLINGFORD	CT	001	S	78471	31-DEC-13	1.2	0.0000012
MC3	CT0100617	WALLINGFORD WATER POLLUTION CONTROL FACILITY	WALLINGFORD	CT	001	S	78471	31-OCT-13	2.04	0.00000204

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3	CT0100625	WATERBURY WATER POLLUTION CONTROL FACILITY	WATERBURY	CT	001	S	78471	30-NOV-13	5	0.000005
MC3	CT0100625	WATERBURY WATER POLLUTION CONTROL FACILITY	WATERBURY	CT	001	SL	78471	31-DEC-13	7.23	0.00000723
MC3	CT0100641	NAUGATUCK WATER POLLUTION CONTROL FACILITY	NAUGATUCK	CT	001	S	78471	30-NOV-13	1.11	0.00000111
MC3	CT0100641	NAUGATUCK WATER POLLUTION CONTROL FACILITY	NAUGATUCK	CT	001	S	78471	30-SEP-13	1.12	0.00000112
MC3	CT0100641	NAUGATUCK WATER POLLUTION CONTROL FACILITY	NAUGATUCK	CT	001	S	78471	31-OCT-13	1.06	0.00000106
MC3	CT0100854	RIDGEFIELD WATER POLLUTION CONTROL FACILITY	RIDGEFIELD	CT	001	S	78471	31-DEC-13	34.7	0.0000347
MC3	CT0100960	PUTNAM W P C F	PUTNAM	CT	001	SL	78471	31-AUG-13	2	0.000002
MC3	CT0100994	POQUONOCK WATER POLLUTION CONTROL FACILITY	WINDSOR	CT	001	S	78471	30-SEP-13	4.99	0.00000499
MC3	CT0100994	POQUONOCK WATER POLLUTION CONTROL FACILITY	WINDSOR	CT	001	S	78471	31-DEC-13	1.75	0.00000175
MC3	CT0101010	EASTSIDE WATER POLLUTION CONTROL FACILITY	BRIDGEPORT	CT	001	S	78471	30-SEP-13	3.97	0.00000397
MC3	CT0101052	SHARON WATER POLLUTION CONTROL FACILITY	SHARON	CT	001	S	78471	31-AUG-13	25.7	0.0000257
MC3	CT0101079	WEST HAVEN WATER POLLUTION CONTROL FACILITY	WEST HAVEN	CT	001	SL	78471	31-JAN-13	1.5	0.0000015
MC3	CT0101184	GROTON WATER POLLUTION CONTROL FACILITY	GROTON	CT	001	S	78471	30-APR-13	3.02	0.00000302
MC3	CT0101184	GROTON WATER POLLUTION CONTROL FACILITY	GROTON	CT	001	S	78471	31-JAN-13	3.92	0.00000392

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3	CT0101184	GROTON WATER POLLUTION CONTROL FACILITY	GROTON	CT	001	S	78471	31-JUL-13	3.87	0.00000387
MC3	CT0101184	GROTON WATER POLLUTION CONTROL FACILITY	GROTON	CT	001	S	78471	31-OCT-13	4.17	0.00000417
MC3	CT0101214	STAFFORD WPCF	STAFFORD SPRINGS	CT	001	SL	78471	30-JUN-13	197	0.000197
MC3	CT0101249	NORWALK WASTEWATER TREATMENT PLANT	NORWALK	CT	001	S	78471	30-SEP-13	1.11	0.00000111
MC3	CT0101281	STONINGTON BOROUGH WPCF	STONINGTON	CT	001	S	78471	31-JAN-13	1.07	0.00000107
MC3	CT0101354	FAIRVIEW COUNTRY CLUB, INC.	GREENWICH	CT	001	S	78471	31-AUG-13	1.11	0.00000111
MC3	CT0101451	RIDGEFIELD WATER POLLUTION CONTROL FACILITY	RIDGEFIELD	CT	001	S	78471	28-FEB-13	17.6	0.0000176
MC3	CT0101656	MILFORD - HOUSATONIC WPCF	MILFORD	CT	001	S	78471	30-JUN-13	1	0.000001
MC3	CT0101745	DEEP RIVER WATER POLLUTION CONTROL FACILITY	DEEP RIVER	CT	001	SL	78471	30-SEP-13	1.07	0.00000107
MC3	CT0101788	NEWTOWN /WPCF	NEWTOWN	CT	001	S	78471	31-JAN-13	1.06	0.00000106
MC3	CT0101788	NEWTOWN /WPCF	NEWTOWN	CT	001	S	78471	31-JUL-13	1.76	0.00000176
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01040	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01042	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01105	28-FEB-13	28	

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01040	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01042	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01105	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01040	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01042	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	30-JUN-13	30	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01105	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01040	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01042	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01105	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01040	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01042	30-SEP-13	30	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01105	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01040	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01042	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01105	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01040	31-DEC-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01042	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01105	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01040	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01042	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01105	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	31-JUL-13	31	1



**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01040	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01042	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01105	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01040	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01042	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01105	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	31-MAY-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01040	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01042	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01105	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01040	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01042	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01105	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	30-JUN-13	91	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	30-JUN-13	91	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	30-JUN-13	91	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	30-JUN-13	91	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	32106	30-JUN-13	91	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	30-JUN-13	91	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	30-JUN-13	91	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	61209	30-JUN-13	91	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	30-SEP-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	30-SEP-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	30-SEP-13	92	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	30-SEP-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	32106	30-SEP-13	92	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	30-SEP-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	30-SEP-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	61209	30-SEP-13	92	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	31-DEC-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	31-DEC-13	92	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	31-DEC-13	92	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	31-DEC-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	32106	31-DEC-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	31-DEC-13	92	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	31-DEC-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	61209	31-DEC-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00400	31-MAR-13	90	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00530	31-MAR-13	90	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	00980	31-MAR-13	90	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	01046	31-MAR-13	90	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	32106	31-MAR-13	90	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50050	31-MAR-13	90	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	50060	31-MAR-13	90	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	1	61209	31-MAR-13	90	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	K	81011	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	K	81011	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	K	81011	30-JUN-13	30	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	K	81011	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	K	81011	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	K	81011	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	K	81011	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	K	81011	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	K	81011	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	K	81011	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	K	81011	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	K	81011	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	SC	01046	30-JUN-13	91	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	SC	01105	30-JUN-13	91	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	SC	50050	30-JUN-13	91	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	SC	01046	30-SEP-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	SC	01105	30-SEP-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	SC	50050	30-SEP-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	SC	01046	31-DEC-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	SC	01105	31-DEC-13	92	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	SC	50050	31-DEC-13	92	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	SC	01046	31-MAR-13	90	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	SC	01105	31-MAR-13	90	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	002	SC	50050	31-MAR-13	90	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00400	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00530	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00980	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01040	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01042	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01046	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01105	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	50050	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00400	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00530	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00980	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01040	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01042	30-APR-13	30	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01046	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01105	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	50050	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00400	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00530	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00980	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01040	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01042	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01046	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01105	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	50050	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00400	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00530	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00980	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01040	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01042	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01046	30-NOV-13	30	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01105	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	50050	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00400	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00530	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00980	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01040	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01042	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01046	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01105	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	50050	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00400	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00530	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00980	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01040	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01042	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01046	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01105	31-AUG-13	31	1



**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	50050	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00400	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00530	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00980	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01040	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01042	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01046	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01105	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	50050	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00400	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00530	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00980	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01040	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01042	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01046	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01105	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	50050	31-JAN-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00400	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00530	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00980	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01040	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01042	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01046	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01105	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	50050	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00400	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00530	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00980	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01040	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01042	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01046	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01105	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	50050	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00400	31-MAY-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00530	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00980	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01040	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01042	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01046	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01105	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	50050	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00400	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00530	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	00980	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01040	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01042	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01046	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	01105	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	1	50050	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	K	81011	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	K	81011	30-APR-13	30	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	K	81011	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	K	81011	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	K	81011	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	K	81011	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	K	81011	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	K	81011	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	K	81011	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	K	81011	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	K	81011	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	003	K	81011	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00400	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00530	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00980	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01040	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01042	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01046	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01105	28-FEB-13	28	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	50050	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00400	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00530	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00980	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01040	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01042	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01046	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01105	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	50050	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00400	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00530	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00980	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01040	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01042	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01046	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01105	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	50050	30-JUN-13	30	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00400	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00530	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00980	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01040	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01042	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01046	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01105	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	50050	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00400	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00530	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00980	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01040	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01042	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01046	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01105	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	50050	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00400	31-AUG-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00530	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00980	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01040	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01042	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01046	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01105	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	50050	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00400	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00530	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00980	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01040	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01042	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01046	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01105	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	50050	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00400	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00530	31-JAN-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00980	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01040	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01042	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01046	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01105	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	50050	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00400	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00530	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00980	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01040	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01042	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01046	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01105	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	50050	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00400	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00530	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00980	31-MAR-13	31	1



**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01040	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01042	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01046	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01105	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	50050	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00400	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00530	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00980	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01040	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01042	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01046	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01105	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	50050	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00400	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00530	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	00980	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01040	31-OCT-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01042	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01046	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	01105	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	1	50050	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	K	81011	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	K	81011	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	K	81011	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	K	81011	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	K	81011	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	K	81011	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	K	81011	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	K	81011	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	K	81011	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	K	81011	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	K	81011	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	004	K	81011	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01046	28-FEB-13	28	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01105	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01046	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01105	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01046	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01105	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01046	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01105	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01046	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01105	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01046	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01105	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01046	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01105	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01046	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01105	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01046	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01105	31-JUL-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01046	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01105	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01046	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01105	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01046	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	0	01105	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00400	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00530	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50050	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50060	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00400	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00530	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50050	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50060	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00400	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00530	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50050	30-JUN-13	30	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50060	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00400	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00530	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50050	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50060	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00400	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00530	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50050	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50060	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00400	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00530	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50050	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50060	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00400	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00530	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50050	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50060	31-DEC-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00400	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00530	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50050	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50060	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00400	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00530	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50050	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50060	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00400	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00530	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50050	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50060	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00400	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00530	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50050	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50060	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00400	31-OCT-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	00530	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50050	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	006	1	50060	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01046	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01105	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01046	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01105	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01046	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01105	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01046	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01105	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01046	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01105	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01046	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01105	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01046	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01105	31-DEC-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01046	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01105	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01046	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01105	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01046	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01105	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01046	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01105	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01046	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	0	01105	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00400	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00530	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00980	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50050	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50060	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00400	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00530	30-APR-13	30	1



**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00980	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50050	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50060	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00400	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00530	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00980	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50050	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50060	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00400	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00530	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00980	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50050	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50060	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00400	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00530	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00980	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50050	30-SEP-13	30	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50060	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00400	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00530	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00980	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50050	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50060	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00400	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00530	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00980	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50050	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50060	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00400	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00530	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00980	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50050	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50060	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00400	31-JUL-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00530	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00980	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50050	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50060	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00400	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00530	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00980	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50050	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50060	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00400	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00530	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00980	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50050	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50060	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00400	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00530	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	00980	31-OCT-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50050	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	007	1	50060	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00400	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00530	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00980	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01046	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01105	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50050	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50060	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00400	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00530	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00980	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01046	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01105	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50050	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50060	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00400	30-JUN-13	30	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00530	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00980	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01046	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01105	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50050	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50060	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00400	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00530	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00980	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01046	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01105	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50050	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50060	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00400	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00530	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00980	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01046	30-SEP-13	30	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01105	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50050	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50060	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00400	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00530	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00980	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01046	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01105	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50050	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50060	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00400	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00530	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00980	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01046	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01105	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50050	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50060	31-DEC-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00400	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00530	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00980	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01046	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01105	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50050	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50060	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00400	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00530	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00980	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01046	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01105	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50050	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50060	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00400	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00530	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00980	31-MAR-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01046	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01105	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50050	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50060	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00400	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00530	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00980	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01046	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01105	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50050	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50060	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00400	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00530	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	00980	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01046	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	01105	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50050	31-OCT-13	31	1



**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	008	1	50060	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00400	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00530	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00980	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	01046	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50050	28-FEB-13	28	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50060	28-FEB-13	28	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00400	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00530	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00980	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	01046	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50050	30-APR-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50060	30-APR-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00400	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00530	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00980	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	01046	30-JUN-13	30	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50050	30-JUN-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50060	30-JUN-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00400	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00530	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00980	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	01046	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50050	30-NOV-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50060	30-NOV-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00400	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00530	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00980	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	01046	30-SEP-13	30	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50050	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50060	30-SEP-13	30	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00400	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00530	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00980	31-AUG-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	01046	31-AUG-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50050	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50060	31-AUG-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00400	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00530	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00980	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	01046	31-DEC-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50050	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50060	31-DEC-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00400	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00530	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00980	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	01046	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50050	31-JAN-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50060	31-JAN-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00400	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00530	31-JUL-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00980	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	01046	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50050	31-JUL-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50060	31-JUL-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00400	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00530	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00980	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	01046	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50050	31-MAR-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50060	31-MAR-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00400	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00530	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00980	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	01046	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50050	31-MAY-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50060	31-MAY-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00400	31-OCT-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00530	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	00980	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	01046	31-OCT-13	31	1
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50050	31-OCT-13	31	
NMBR_OF_D AYS	DC0000019	US ARMY CORPS OF ENGINEERS DALECARLIA WTP	WASHINGTON	DC	009	1	50060	31-OCT-13	31	1
MC1	FL0102202	PACE WATER SYSTEM, INC WWTP #1	PACE	FL	001	Q	71901	31-DEC-13	1.6	0.0000016
FQ1_304M	GA0003191	FELDSPAR MONTICELLO PLANT	MONTICELLO	GA	001	1	50050	30-NOV-13	595.8	0.00596
MC2	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	28-FEB-13	3.2	0.0000032
MC3	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	28-FEB-13	3.2	0.0000032
MC3	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	30-APR-13	3.1	0.0000031
MC2	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	30-APR-13	3.1	0.0000031
MC3	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	30-NOV-13	1.4	0.0000014
MC2	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	30-NOV-13	1.4	0.0000014
MC3	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	30-SEP-13	2.2	0.0000022
MC2	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	30-SEP-13	2.2	0.0000022
MC2	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	31-AUG-13	5.1	0.0000051
MC3	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	31-AUG-13	5.1	0.0000051
MC2	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	31-DEC-13	2.6	0.0000026
MC3	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	31-DEC-13	2.6	0.0000026
MC2	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	31-JAN-13	2.4	0.0000024
MC3	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	31-JAN-13	2.4	0.0000024
MC2	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	31-JUL-13	3.6	0.0000036
MC3	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	31-JUL-13	3.6	0.0000036

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	31-MAY-13	2.6	0.0000026
MC2	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	31-MAY-13	2.6	0.0000026
MC3	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	31-OCT-13	1.5	0.0000015
MC2	GA0026638	LEESBURG POND WPCP	LEESBURG	GA	0B1	1	71901	31-OCT-13	1.5	0.0000015
MC2	GA0031046	FORT VALLEY WPCP	FORT VALLEY	GA	0B1	1	71901	30-SEP-13	1.38	0.00000138
MQ1	GA0031046	FORT VALLEY WPCP	FORT VALLEY	GA	0B1	1	71901	30-SEP-13	6.864	0.000006864
MQ2	GA0031046	FORT VALLEY WPCP	FORT VALLEY	GA	0B1	1	71901	30-SEP-13	6.864	0.000006864
MC3	GA0031046	FORT VALLEY WPCP	FORT VALLEY	GA	0B1	1	71901	30-SEP-13	1.38	0.00000138
MQ1	GA0031046	FORT VALLEY WPCP	FORT VALLEY	GA	0B1	1	71901	31-JUL-13	6.0845	6.0845E-06
MQ2	GA0031046	FORT VALLEY WPCP	FORT VALLEY	GA	0B1	1	71901	31-JUL-13	6.0845	6.0845E-06
MC2	GA0031046	FORT VALLEY WPCP	FORT VALLEY	GA	0B1	1	71901	31-OCT-13	1.64	0.00000164
MQ2	GA0031046	FORT VALLEY WPCP	FORT VALLEY	GA	0B1	1	71901	31-OCT-13	5.9161	5.9161E-06
MC3	GA0031046	FORT VALLEY WPCP	FORT VALLEY	GA	0B1	1	71901	31-OCT-13	1.64	0.00000164
MQ1	GA0031046	FORT VALLEY WPCP	FORT VALLEY	GA	0B1	1	71901	31-OCT-13	5.9161	5.9161E-06
MC2	GA0038466	WAYNESBORO (BRIER CREEK)	WAYNESBORO	GA	0B0	1	71901	30-JUN-13	45600	0.0456
MC2	GA0038466	WAYNESBORO (BRIER CREEK)	WAYNESBORO	GA	0B0	1	71901	31-DEC-13	2.88	0.00000288
MC3	IL0020583	FOX RIVER GROVE WWTP	FOX RIVER GROVE	IL	001	1	71900	28-FEB-13	5.66	0.00000566
MC3	IL0022179	MOMENCE STW	MOMENCE	IL	001	1	71900	31-MAR-13	1.5	0.0000015
MC3	IL0022675	CARLINVILLE STP, CITY OF	CARLINVILLE	IL	001	1	71900	30-APR-13	9.92	0.00000992
MC3	IL0022675	CARLINVILLE STP, CITY OF	CARLINVILLE	IL	001	1	71900	31-OCT-13	6.87	0.00000687
MC2	IL0023612	CLINTON SD STP	CLINTON	IL	001	1	71900	30-SEP-13	2.916	0.000002916
MC3	IL0023612	CLINTON SD STP	CLINTON	IL	001	1	71900	30-SEP-13	6.11	0.00000611
MC2	IL0023612	CLINTON SD STP	CLINTON	IL	001	1	71900	31-MAY-13	3.056	0.000003056
MC3	IL0025089	MANTENO WPCC, VILLAGE OF	MANTENO	IL	001	1	71900	31-JAN-13	41	0.000041

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3	IL0028347	DEERFIELD, VILLAGE OF	DEERFIELD	IL	001	8	71900	30-SEP-13	1.29	0.00000129
MC3	IL0028347	DEERFIELD, VILLAGE OF	DEERFIELD	IL	001	8	71900	31-MAR-13	1.58	0.00000158
MC3	IL0029947	NORTH SLOPE TREATMENT PLANT	MOLINE	IL	001	1	71900	31-MAY-13	1	0.000001
MC3	IL0060674	CORA TERMINAL	ROCKWOOD	IL	001	1	71900	31-DEC-13	2.03	0.00000203
MC1	IL0060674	CORA TERMINAL	ROCKWOOD	IL	001	1	71900	31-DEC-13	2.03	0.00000203
MC1	IL0060674	CORA TERMINAL	ROCKWOOD	IL	001	1	71900	31-MAR-13	9.07	0.00000907
MC3	IL0060674	CORA TERMINAL	ROCKWOOD	IL	001	1	71900	31-MAR-13	9.07	0.00000907
MC2	IL0061107	CID RECYCLING & DISPOSAL FACILITY	CALUMET CITY	IL	003	1	71900	30-JUN-13	5	0.000005
MC3	IL0061107	CID RECYCLING & DISPOSAL FACILITY	CALUMET CITY	IL	003	1	71900	30-JUN-13	5	0.000005
MC3	IL0061956	VIPER MINE	ELKHART	IL	006	1	71900	31-MAY-13	1.26	0.00000126
MC3	IL0064998	CREST HILL WWTF	CREST HILL	IL	001	1	71900	30-APR-13	1.53	0.00000153
MC3	IL0065188	DUPAGE CO PW-KNOLLWOOD STP	BURR RIDGE	IL	001	1	71900	28-FEB-13	2.2	0.0000022
MC3	IL0068641	SPOON RIDGE LANDFILL	FAIRVIEW	IL	001	1	71900	30-SEP-13	2.8	0.0000028
MC2	IL0068641	SPOON RIDGE LANDFILL	FAIRVIEW	IL	001	1	71900	30-SEP-13	2.8	0.0000028
MC3	IL0068641	SPOON RIDGE LANDFILL	FAIRVIEW	IL	002	1	71900	30-SEP-13	2.8	0.0000028
MC2	IL0068641	SPOON RIDGE LANDFILL	FAIRVIEW	IL	002	1	71900	30-SEP-13	2.8	0.0000028
MC3	IL0070912	RUSSELL MINERALS WEST FRANKFORT INC	WEST FRANKFORT	IL	001	1	71900	30-APR-13	200	0.0002
MC3	IL0070912	RUSSELL MINERALS WEST FRANKFORT INC	WEST FRANKFORT	IL	001	1	71900	31-MAR-13	200	0.0002
MC3	IL0072192	FRANKFORT REGIONAL WWTP	FRANKFORT	IL	001	1	71900	28-FEB-13	5.91	0.00000591
MC3	IL0072656	KNIGHT HAWK COAL LLC	VERGENNES	IL	007	1	71900	30-NOV-13	1.12	0.00000112
MC3	IL0075647	STREATOR ENERGY PARTNERS LLC	STREATOR	IL	001	1	71900	30-SEP-13	1.3	0.0000013
MC2	IL0075647	STREATOR ENERGY PARTNERS LLC	STREATOR	IL	001	1	71900	30-SEP-13	1.3	0.0000013

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC2	IL0075647	STREATOR ENERGY PARTNERS LLC	STREATOR	IL	001	1	71900	31-DEC-13	6.5	0.0000065
MC3	IL0075647	STREATOR ENERGY PARTNERS LLC	STREATOR	IL	001	1	71900	31-DEC-13	6.5	0.0000065
MC2	IL0075647	STREATOR ENERGY PARTNERS LLC	STREATOR	IL	001	1	71900	31-MAR-13	1.1	0.0000011
MC3	IL0075647	STREATOR ENERGY PARTNERS LLC	STREATOR	IL	001	1	71900	31-MAR-13	1.1	0.0000011
MC3	IL0078301	ROCK FALLS, CITY OF	ROCK FALLS	IL	001	1	71900	30-APR-13	1.2	0.0000012
MC3	IL0078301	ROCK FALLS, CITY OF	ROCK FALLS	IL	001	1	71900	30-NOV-13	1.11	0.00000111
MC3	IL0078671	WASTE MANAGEMENT OF ILLINOIS INC	MORRISON	IL	002	1	71900	31-MAR-13	1.87	0.00000187
MC2	IL0078671	WASTE MANAGEMENT OF ILLINOIS INC	MORRISON	IL	002	1	71900	31-MAR-13	1.87	0.00000187
MC3	IL0078671	WASTE MANAGEMENT OF ILLINOIS INC	MORRISON	IL	003	1	71900	31-MAR-13	3.34	0.00000334
MC2	IL0078671	WASTE MANAGEMENT OF ILLINOIS INC	MORRISON	IL	003	1	71900	31-MAR-13	3.34	0.00000334
MC2	IL0078751	JOPPA STEAM GENERATING STATION	JOPPA	IL	001	1	71900	31-MAY-13	1.12	0.00000112
MC3	IL0078921	WHITE OAK RESOURCES, LLC	MCLEANSBORO	IL	001	1	71900	31-DEC-13	1.76	0.00000176
MQ1	IN0000205	ARCELORMITTAL INDIANA HARBOR LLC	EAST CHICAGO	IN	002	1	71901	28-FEB-13	92.072562	9.20726E-05
MQ2	IN0000205	ARCELORMITTAL INDIANA HARBOR LLC	EAST CHICAGO	IN	002	1	71901	28-FEB-13	92.072562	9.20726E-05
MQ2	IN0000205	ARCELORMITTAL INDIANA HARBOR LLC	EAST CHICAGO	IN	009	1	71901	28-FEB-13	267.67347	0.000267673
MQ1	IN0000205	ARCELORMITTAL INDIANA HARBOR LLC	EAST CHICAGO	IN	009	1	71901	28-FEB-13	267.67347	0.000267673
MQ1	IN0000205	ARCELORMITTAL INDIANA HARBOR LLC	EAST CHICAGO	IN	010	1	71901	28-FEB-13	378.66213	0.000378662
MQ2	IN0000205	ARCELORMITTAL INDIANA HARBOR LLC	EAST CHICAGO	IN	010	1	71901	28-FEB-13	378.66213	0.000378662



**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MQ2	IN0000205	ARCELORMITTAL INDIANA HARBOR LLC	EAST CHICAGO	IN	011	1	71901	28-FEB-13	95.836735	9.58367E-05
MQ1	IN0000205	ARCELORMITTAL INDIANA HARBOR LLC	EAST CHICAGO	IN	011	1	71901	28-FEB-13	95.836735	9.58367E-05
MC3	IN0004685	IPL HARDING STREET GENERATING STATION	INDIANAPOLIS	IN	006	1	71901	28-FEB-13	164	0.000164
MC3	IN0004685	IPL HARDING STREET GENERATING STATION	INDIANAPOLIS	IN	006	1	71901	30-APR-13	151	0.000151
MC3	IN0004685	IPL HARDING STREET GENERATING STATION	INDIANAPOLIS	IN	006	1	71901	30-JUN-13	151	0.000151
MC3	IN0004685	IPL HARDING STREET GENERATING STATION	INDIANAPOLIS	IN	006	1	71901	31-AUG-13	36	0.000036
MC3	IN0004685	IPL HARDING STREET GENERATING STATION	INDIANAPOLIS	IN	006	1	71901	31-DEC-13	76.2	0.0000762
MC3	IN0004685	IPL HARDING STREET GENERATING STATION	INDIANAPOLIS	IN	006	1	71901	31-OCT-13	78	0.000078
MQ2	IN0022462	BUTLER MUNICIPAL WWTP	BUTLER	IN	002	1	71901	30-JUN-13	4.6122449	4.61224E-06
MQ2	IN0022462	BUTLER MUNICIPAL WWTP	BUTLER	IN	002	1	71901	31-AUG-13	3.6099773	3.60998E-06
MQ2	IN0022462	BUTLER MUNICIPAL WWTP	BUTLER	IN	002	1	71901	31-DEC-13	4.5986395	4.59864E-06
MC2	KY0021024	CMUC STP	MORGANTOWN	KY	001	SL	78471	31-DEC-13	1.6	0.0000016
MC2	KY0021130	CALVERT CITY MUNICIPAL STP	CALVERT CITY	KY	001	SL	78471	31-DEC-13	2.58	0.00000258
MC3	KY0021130	CALVERT CITY MUNICIPAL STP	CALVERT CITY	KY	001	SL	78471	31-DEC-13	2.58	0.00000258
MC3	KY0021164	GLASGOW WASTEWATER TREATMENT PLANT	GLASGOW	KY	001	SL	78471	31-DEC-13	1.81	0.00000181
MC2	KY0021164	GLASGOW WASTEWATER TREATMENT PLANT	GLASGOW	KY	001	SL	78471	31-DEC-13	1.81	0.00000181
MC2	KY0021211	MAYFIELD STP	MAYFIELD	KY	001	1	71901	31-DEC-13	1.9	0.0000019
MC3	KY0021211	MAYFIELD STP	MAYFIELD	KY	001	1	71901	31-DEC-13	1.9	0.0000019
MC2	KY0021211	MAYFIELD STP	MAYFIELD	KY	001	G	71901	31-DEC-13	8.5	0.0000085
MC3	KY0021211	MAYFIELD STP	MAYFIELD	KY	001	G	71901	31-DEC-13	8.5	0.0000085

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3	KY0021211	MAYFIELD STP	MAYFIELD	KY	001	SL	78471	31-DEC-13	1.32	0.00000132
MC2	KY0021211	MAYFIELD STP	MAYFIELD	KY	001	SL	78471	31-DEC-13	1.32	0.00000132
MC2	KY0021237	BARDSTOWN WASTEWATER TREATMENT PLANT - TOWN CREEK	BARDSTOWN	KY	001	SL	78471	31-DEC-13	2.9	0.0000029
MC3	KY0021237	BARDSTOWN WASTEWATER TREATMENT PLANT - TOWN CREEK	BARDSTOWN	KY	001	SL	78471	31-DEC-13	2.9	0.0000029
MC3	KY0021466	N KY SD1 - DRY CREEK STP	VILLA HILLS	KY	001	SL	78471	31-DEC-13	3	0.000003
MC2	KY0021466	N KY SD1 - DRY CREEK STP	VILLA HILLS	KY	001	SL	78471	31-DEC-13	3	0.000003
MC3	KY0022411	METROPOLITAN SEWER DISTRICT	LOUISVILLE	KY	001	SL	78471	31-DEC-13	5.37	0.00000537
MC2	KY0022420	HITE CREEK WQTC MSD	LOUISVILLE	KY	001	1	71901	31-MAR-13	3.22	0.00000322
MC3	KY0022420	HITE CREEK WQTC MSD	LOUISVILLE	KY	001	1	71901	31-MAR-13	3.22	0.00000322
MC2	KY0022799	PADUCAH WASTEWATER TREATMENT PLANT	PADUCAH	KY	001	SL	78471	31-DEC-13	1.38	0.00000138
MC3	KY0022799	PADUCAH WASTEWATER TREATMENT PLANT	PADUCAH	KY	001	SL	78471	31-DEC-13	1.38	0.00000138
MC2	KY0022861	FRANKFORT MUNICIPAL STP	FRANKFORT	KY	001	G	71901	31-DEC-13	27	0.000027
MC3	KY0022861	FRANKFORT MUNICIPAL STP	FRANKFORT	KY	001	G	71901	31-DEC-13	37.6	0.0000376
MC3	KY0022861	FRANKFORT MUNICIPAL STP	FRANKFORT	KY	001	SL	78471	31-DEC-13	1.7	0.0000017
MC2	KY0024783	SCOTTSVILLE	SCOTTSVILLE	KY	001	SL	78471	31-DEC-13	1.03	0.00000103
MC3	KY0024783	SCOTTSVILLE	SCOTTSVILLE	KY	001	SL	78471	31-DEC-13	1.03	0.00000103
MC3	KY0026352	LIBERTY STP	LIBERTY	KY	001	SL	78471	31-DEC-13	4.2	0.0000042
MC2	KY0026352	LIBERTY STP	LIBERTY	KY	001	SL	78471	31-DEC-13	4.2	0.0000042
MC3	KY0026883	EMINENCE STP	EMINENCE	KY	001	SL	78471	31-DEC-13	1.311	0.000001311
MC2	KY0026883	EMINENCE STP	EMINENCE	KY	001	SL	78471	31-DEC-13	1.311	0.000001311
MC3	KY0027359	SHEPHERDSVILLE WATER PLANT BOARD	SHEPHERDSVILLE	KY	001	1	78471	31-DEC-13	1.7	0.0000017

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC2	KY0027359	SHEPHERDSVILLE WATER PLANT BOARD	SHEPHERDSVILLE	KY	001	1	78471	31-DEC-13	1.7	0.0000017
MC3	KY0027456	FRANKLIN WASTEWATER TREATMENT PLANT	FRANKLIN	KY	001	SL	78471	31-DEC-13	1.8	0.0000018
MC2	KY0027456	FRANKLIN WASTEWATER TREATMENT PLANT	FRANKLIN	KY	001	SL	78471	31-DEC-13	1	0.0000001
MC3	KY0028401	PRINCETON STP	PRINCETON	KY	001	SL	78471	31-DEC-13	3.7	0.0000037
MC2	KY0028401	PRINCETON STP	PRINCETON	KY	001	SL	78471	31-DEC-13	3.3	0.0000033
MC3	KY0057193	DANVILLE STP	DANVILLE	KY	001	SL	78471	31-DEC-13	3.5	0.0000035
MC2	KY0057193	DANVILLE STP	DANVILLE	KY	001	SL	78471	31-DEC-13	3.5	0.0000035
MC3	KY0098043	MADISONVILLE STP WEST SIDE	MADISONVILLE	KY	001	SL	78471	31-DEC-13	2.05	0.00000205
MC2	KY0098043	MADISONVILLE STP WEST SIDE	MADISONVILLE	KY	001	SL	78471	31-DEC-13	1.38	0.00000138
MC3	KY0100404	JESSAMINE CRK ENV CONTROL #1	NICHOLASVILLE	KY	001	SL	78471	31-DEC-13	1.3	0.0000013
MC2	KY0104027	JERRY L RILEY STP	BARDSTOWN	KY	001	SL	78471	31-DEC-13	1.2	0.0000012
MC3	KY0104027	JERRY L RILEY STP	BARDSTOWN	KY	001	SL	78471	31-DEC-13	1.2	0.0000012
MC3	KY0105856	CYNTHIANA STP (NEW)	CYNTHIANA	KY	001	SL	78471	31-DEC-13	34	0.000034
MC2	KY0105856	CYNTHIANA STP (NEW)	CYNTHIANA	KY	001	SL	78471	31-DEC-13	34	0.000034
MQ1_304M	LA0038245	CLEAN HARBORS BATON ROUGE LLC	BATON ROUGE	LA	001	1	39338	30-JUN-13	4.0816327	0
NMBR_OF_DAYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00400	28-FEB-13	28	1
NMBR_OF_DAYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00680	28-FEB-13	28	1
NMBR_OF_DAYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	03582	28-FEB-13	28	1
NMBR_OF_DAYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	50050	28-FEB-13	28	1
NMBR_OF_DAYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00400	30-APR-13	30	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00680	30-APR-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	03582	30-APR-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	50050	30-APR-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00400	30-JUN-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00680	30-JUN-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	03582	30-JUN-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	50050	30-JUN-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00400	30-NOV-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00680	30-NOV-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	03582	30-NOV-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	50050	30-NOV-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00400	30-SEP-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00680	30-SEP-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	03582	30-SEP-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	50050	30-SEP-13	30	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00400	31-AUG-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00680	31-AUG-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	03582	31-AUG-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	50050	31-AUG-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00400	31-DEC-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00680	31-DEC-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	03582	31-DEC-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	50050	31-DEC-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00400	31-JAN-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00680	31-JAN-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	03582	31-JAN-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	50050	31-JAN-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00400	31-JUL-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00680	31-JUL-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	03582	31-JUL-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	50050	31-JUL-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00400	31-MAR-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00680	31-MAR-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	03582	31-MAR-13	31	1

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	50050	31-MAR-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00400	31-MAY-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00680	31-MAY-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	03582	31-MAY-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	50050	31-MAY-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00400	31-OCT-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	00680	31-OCT-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	03582	31-OCT-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	50050	31-OCT-13	31	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	71900	30-JUN-13	181	1
NMBR_OF_D AYS	LA0071382	WESTLAKE POLYMERS LP	SULPHUR	LA	011	1	71900	31-DEC-13	184	1
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	001	1	71900	28-FEB-13	1.39	0.00000139
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	001	1	71900	30-APR-13	1.77	0.00000177
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	001	1	71900	30-JUN-13	1.93	0.00000193
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	001	1	71900	30-NOV-13	3.32	0.00000332
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	001	1	71900	30-SEP-13	2	0.000002
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	001	1	71900	31-AUG-13	1.33	0.00000133
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	001	1	71900	31-DEC-13	2.04	0.00000204
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	001	1	71900	31-JAN-13	2.38	0.00000238
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	001	1	71900	31-JUL-13	3.32	0.00000332
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	001	1	71900	31-MAR-13	1.25	0.00000125

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	001	1	71900	31-MAY-13	4.6	0.0000046
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	001	1	71900	31-OCT-13	1.49	0.00000149
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	002	1	71900	28-FEB-13	1.14	0.00000114
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	002	1	71900	30-APR-13	2.65	0.00000265
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	002	1	71900	30-JUN-13	2.85	0.00000285
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	002	1	71900	30-NOV-13	3.38	0.00000338
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	002	1	71900	30-SEP-13	3.92	0.00000392
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	002	1	71900	31-AUG-13	1.58	0.00000158
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	002	1	71900	31-DEC-13	2.15	0.00000215
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	002	1	71900	31-JAN-13	2.61	0.00000261
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	002	1	71900	31-JUL-13	4.18	0.00000418
MC2_304M	MI0000540	BASF CORP	WYANDOTTE	MI	002	1	71900	31-MAR-13	0.873	0.00000087
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	002	1	71900	31-MAY-13	2.55	0.00000255
MC2	MI0000540	BASF CORP	WYANDOTTE	MI	002	1	71900	31-OCT-13	1.73	0.00000173
MC2	MN0020192	DETROIT LAKES WWTP	DETROIT LAKES	MN	020	1	71900	31-AUG-13	9	0.000009
MC2	MN0020192	DETROIT LAKES WWTP	DETROIT LAKES	MN	020	1	71890	31-DEC-13	7.65	0.00000765
MC2	MN0020192	DETROIT LAKES WWTP	DETROIT LAKES	MN	020	1	71900	31-DEC-13	21	0.000021
MC2	MN0020192	DETROIT LAKES WWTP	DETROIT LAKES	MN	020	1	71900	31-MAR-13	1.28	0.00000128
MC2	MN0020788	ELK RIVER WWTP	ELK RIVER	MN	010	G	71900	30-JUN-13	18.4	0.0000184
MC2	MN0020788	ELK RIVER WWTP	ELK RIVER	MN	010	G	71900	31-MAR-13	459	0.000459
MC2	MN0022080	GRAND RAPIDS WWTP	GRAND RAPIDS	MN	901	G	71900	31-MAR-13	43.7	0.0000437
MC2	MN0022233	GLENCOE WWTP	GLENCOE	MN	011	G	71900	30-JUN-13	242	0.000242
MC2	MN0022233	GLENCOE WWTP	GLENCOE	MN	011	G	71900	30-SEP-13	1760	0.00176
MC2	MN0022233	GLENCOE WWTP	GLENCOE	MN	011	G	71900	31-DEC-13	53.3	0.0000533
MC2	MN0022233	GLENCOE WWTP	GLENCOE	MN	011	G	71900	31-MAR-13	75	0.000075
MC3	MN0023973	LITCHFIELD WWTP	LITCHFIELD	MN	010	G	71900	30-NOV-13	44.4	0.0000444

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3	MN0023973	LITCHFIELD WWTP	LITCHFIELD	MN	010	G	71900	30-SEP-13	56.7	0.0000567
MC3	MN0023973	LITCHFIELD WWTP	LITCHFIELD	MN	010	G	71900	31-JAN-13	71.5	0.0000715
MC3	MN0023973	LITCHFIELD WWTP	LITCHFIELD	MN	010	G	71900	31-JUL-13	86.9	0.0000869
MC3	MN0023973	LITCHFIELD WWTP	LITCHFIELD	MN	010	G	71900	31-MAR-13	40.4	0.0000404
MC3	MN0023973	LITCHFIELD WWTP	LITCHFIELD	MN	010	G	71900	31-MAY-13	107	0.000107
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	1	71900	28-FEB-13	3.6	0.0000036
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	1	71900	30-APR-13	3.2	0.0000032
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	1	71900	30-JUN-13	4.3	0.0000043
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	1	71900	30-NOV-13	3.4	0.0000034
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	1	71900	31-AUG-13	4.2	0.0000042
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	1	71900	31-DEC-13	3.1	0.0000031
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	1	71900	31-JAN-13	2.98	0.00000298
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	1	71900	31-JUL-13	4.2	0.0000042
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	1	71900	31-MAR-13	4.4	0.0000044
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	1	71900	31-MAY-13	4	0.000004
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	G	71900	30-JUN-13	23.7	0.0000237
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	G	71900	30-SEP-13	873	0.000873
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	G	71900	31-DEC-13	91.2	0.0000912
MC3	MN0024571	RED WING CITY OF	RED WING	MN	010	G	71900	31-MAR-13	48.8	0.0000488
MC3	MN0025887	USDI BIA GRND PRTG IND RES	GRAND PORTAGE	MN	001	G	71900	30-JUN-13	5.64	0.00000564
MC3	MN0025887	USDI BIA GRND PRTG IND RES	GRAND PORTAGE	MN	001	G	71900	30-SEP-13	8.62	0.00000862
MC3	MN0025887	USDI BIA GRND PRTG IND RES	GRAND PORTAGE	MN	001	G	71900	31-DEC-13	73.2	0.0000732
MC3_304M	NC0004308	ALCOA - BADIN WORKS	BADIN	NC	005	1	00720	28-FEB-13	14	0.014
MC3_304M	NC0004308	ALCOA - BADIN WORKS	BADIN	NC	005	1	00720	30-APR-13	27	0.027
MC3_304M	NC0004308	ALCOA - BADIN WORKS	BADIN	NC	005	1	00720	30-JUN-13	20	0.02



**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3_304M	NC0004308	ALCOA - BADIN WORKS	BADIN	NC	005	1	00720	30-NOV-13	8	0.008
MC3_304M	NC0004308	ALCOA - BADIN WORKS	BADIN	NC	005	1	00720	30-SEP-13	17	0.017
MC3_304M	NC0004308	ALCOA - BADIN WORKS	BADIN	NC	005	1	00720	31-AUG-13	49	0.049
MC3_304M	NC0004308	ALCOA - BADIN WORKS	BADIN	NC	005	1	00720	31-JAN-13	9.2	0.0092
MC3_304M	NC0004308	ALCOA - BADIN WORKS	BADIN	NC	005	1	00720	31-JUL-13	54	0.054
MC3_304M	NC0004308	ALCOA - BADIN WORKS	BADIN	NC	005	1	00720	31-MAR-13	33	0.033
MC3_304M	NC0004308	ALCOA - BADIN WORKS	BADIN	NC	005	1	00720	31-MAY-13	23	0.023
MC3_304M	NC0004308	ALCOA - BADIN WORKS	BADIN	NC	005	1	00720	31-OCT-13	14	0.014
MC3	NE0020915	BEATRICE WASTEWATER TREATMENT	BEATRICE	NE	SLG	SL	78471	30-JUN-13	5.95	0.00000595
MC3	NE0021121	PLATTSMOUTH WWTP	PLATTSMOUTH	NE	SLG	SL	78471	30-SEP-13	1.21	0.00000121
MC3	NE0021172	BURWELL WASTEWATER TREATMENT	BURWELL	NE	SLG	SL	78471	31-DEC-13	5.1	0.0000051
MC2	NE0021172	BURWELL WASTEWATER TREATMENT	BURWELL	NE	SLG	SL	78471	31-DEC-13	5.1	0.0000051
MC3	NE0021253	CREIGHTON WASTEWATER TREATMENT	CREIGHTON	NE	SLG	SL	78471	30-JUN-13	7.49	0.00000749
MC3	NE0021504	MCCOOK WWTP	MCCOOK	NE	SLG	SL	78471	30-APR-13	2.43	0.00000243
MC3	NE0021504	MCCOOK WWTP	MCCOOK	NE	SLG	SL	78471	30-JUN-13	2.3	0.0000023
MC3	NE0021504	MCCOOK WWTP	MCCOOK	NE	SLG	SL	78471	31-AUG-13	4.07	0.00000407
MC3	NE0021504	MCCOOK WWTP	MCCOOK	NE	SLG	SL	78471	31-JAN-13	1.64	0.00000164
MC3	NE0021504	MCCOOK WWTP	MCCOOK	NE	SLG	SL	78471	31-OCT-13	3.46	0.00000346
MC3	NE0021610	ATKINSON WASTEWATER TREATMENT	ATKINSON	NE	SLG	SL	78471	31-MAR-13	6.04	0.00000604
MC3	NE0021661	WOOD RIVER WWTP	WOOD RIVER	NE	SLG	SL	78471	31-DEC-13	6.8	0.0000068
MC3	NE0021679	WAHOO WASTEWATER TREATMENT	WAHOO	NE	SLG	SL	78471	30-JUN-13	1.95	0.00000195
MC2	NE0021679	WAHOO WASTEWATER TREATMENT	WAHOO	NE	SLG	SL	78471	30-JUN-13	1.95	0.00000195

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC2	NE0023817	EDISON WASTEWATER TREATMENT FACILITY	EDISON	NE	SLG	SL	78471	30-SEP-13	2.1	0.0000021
MC3	NE0023817	EDISON WASTEWATER TREATMENT FACILITY	EDISON	NE	SLG	SL	78471	30-SEP-13	2.1	0.0000021
MC3	NE0023876	SEWARD WASTE & POTABLE WATER	SEWARD	NE	SLG	1	78471	30-JUN-13	3.55	0.00000355
MC1	NE0023884	SIDNEY WASTEWATER TREATMENT FACILITY	SIDNEY	NE	SLG	SL	78471	30-JUN-13	1.82	0.00000182
MC3	NE0023884	SIDNEY WASTEWATER TREATMENT FACILITY	SIDNEY	NE	SLG	SL	78471	30-JUN-13	2.31	0.00000231
MC3	NE0023922	LAUREL	LAUREL	NE	SLG	SL	78471	30-SEP-13	2.38	0.00000238
MC3	NE0023957	WISNER WASTEWATER TREATMENT	WISNER	NE	SLG	1	78471	30-JUN-13	1.9	0.0000019
MC2	NE0023957	WISNER WASTEWATER TREATMENT	WISNER	NE	SLG	1	78471	30-JUN-13	1.9	0.0000019
MC3	NE0024007	FRIEND WASTEWATER TREATMENT FACILITY	FRIEND	NE	SLG	SL	78471	30-JUN-13	2.82	0.00000282
MC3	NE0029149	RANDOLPH WASTEWATER TREATMENT FACILITY	RANDOLPH	NE	SLG	SL	78471	30-SEP-13	1.69	0.00000169
MC3	NE0031381	FREMONT WASTEWATER TREATMENT	FREMONT	NE	SLG	SL	78471	31-DEC-13	2.35	0.00000235
MC3	NE0032891	NORTH PLATTE WASTEWATER TREAT	NORTH PLATTE	NE	SLG	SL	78471	31-MAR-13	1.03	0.00000103
MC3	NE0033111	WAYNE WASTEWATER TREATMENT	WAYNE	NE	SLG	SL	78471	31-DEC-13	3.62	0.00000362
MC3	NE0034304	CRETE WASTEWATER TREATMENT FACILITY	CRETE	NE	SLG	SL	78471	31-MAR-13	2.53	0.00000253
MC3	NE0036820	THERESA STREET WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	30-APR-13	1.05243	1.05243E-06
MC3	NE0036820	THERESA STREET WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	30-SEP-13	1.4388	1.4388E-06

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3	NE0036820	THERESA STREET WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	31-AUG-13	1.1643	1.1643E-06
MC3	NE0036820	THERESA STREET WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	31-DEC-13	1.26446	1.26446E-06
MC3	NE0036820	THERESA STREET WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	31-JAN-13	1.16969	1.16969E-06
MC3	NE0036820	THERESA STREET WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	31-JUL-13	1.07865	1.07865E-06
MC3	NE0036820	THERESA STREET WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	31-MAR-13	1.03164	1.03164E-06
MC3	NE0036820	THERESA STREET WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	31-MAY-13	1.3945	1.3945E-06
MC3	NE0036820	THERESA STREET WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	31-OCT-13	1331933	1.331933
MC3	NE0038946	HASTINGS POLLUTION CONTROL CTR	HASTINGS	NE	SLG	SL	78471	30-JUN-13	1.88	0.00000188
MC3	NE0040045	OGALLALA WASTEWATER TRTMNT 01	OGALLALA	NE	SLG	SL	78471	30-JUN-13	3.15	0.00000315
MC3	NE0040959	STAPLEHURST WASTEWATER TREATMENT FACILITY	STAPLEHURST	NE	SLG	SL	78471	31-MAR-13	1.59	0.00000159
MC3	NE0042048	PAWNEE CITY WASTEWATER TREATMENT FACILITY	PAWNEE CITY	NE	SLG	SL	78471	31-DEC-13	6.73	0.00000673
MC3	NE0042064	DODGE WASTEWATER TREATMENT FACILITY	DODGE	NE	SLG	SL	78471	31-DEC-13	2.42	0.00000242
MC3	NE0042668	LEXINGTON WASTEWATER TREATMENT	LEXINGTON	NE	SLG	SL	78471	30-JUN-13	1.86	0.00000186
MC3	NE0046183	HICKMAN WASTEWATER TREATMENT	HICKMAN	NE	SLG	SL	78471	31-DEC-13	2.62	0.00000262

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3	NE0047376	GOTHENBURG WASTEWATER TREATMNT	GOTHENBURG	NE	SLG	SL	78471	30-SEP-13	1.2	0.0000012
MC3	NE0051489	VALENTINE WATER & SEWER DEPARTMENT	VALENTINE	NE	SLG	SL	78471	30-JUN-13	2.68	0.00000268
MC3	NE0112062	EAGLE WASTEWATER TREATMENT FACILITY	EAGLE	NE	SLG	SL	78471	30-SEP-13	1.51	0.00000151
MC2	NE0112062	EAGLE WASTEWATER TREATMENT FACILITY	EAGLE	NE	SLG	SL	78471	30-SEP-13	1.51	0.00000151
MC3	NE0112267	AINSWORTH WASTEWATER TREATMENT FACILITY	AINSWORTH	NE	SLG	SL	78471	30-SEP-13	1.38	0.00000138
MC3	NE0112488	LINCOLN NORTHEAST WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	30-SEP-13	1.24	0.00000124
MC3	NE0112488	LINCOLN NORTHEAST WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	31-AUG-13	1.54	0.00000154
MC3	NE0112488	LINCOLN NORTHEAST WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	31-DEC-13	1.04	0.00000104
MC3	NE0112488	LINCOLN NORTHEAST WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	31-JUL-13	1.6	0.0000016
MC3	NE0112488	LINCOLN NORTHEAST WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	31-MAR-13	1.19949	1.19949E-06
MC3	NE0112488	LINCOLN NORTHEAST WASTEWATER TREATMENT FACILITY	LINCOLN	NE	SLG	SL	78471	31-OCT-13	1.4	0.0000014
MC3	NE0112810	PAPILLION CREEK WASTEWATER TREATMENT PLANT	BELLEVUE	NE	SLG	1	78471	30-SEP-13	1.3	0.0000013
MC3	NE0112810	PAPILLION CREEK WASTEWATER TREATMENT PLANT	BELLEVUE	NE	SLG	1	78471	31-DEC-13	5.6	0.0000056

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3	NE0112810	PAPILLION CREEK WASTEWATER TREATMENT PLANT	BELLEVUE	NE	SLG	1	78471	31-MAR-13	1.5	0.0000015
MC2	NM0020141	LOS ALAMOS COUNTY PUD-BAYO WWTP	LOS ALAMOS	NM	SLL	R	78471	30-JUN-13	17	0.000017
MC3	NM0020141	LOS ALAMOS COUNTY PUD-BAYO WWTP	LOS ALAMOS	NM	SLL	R	78471	30-JUN-13	57	0.000057
MC3	NM0020141	LOS ALAMOS COUNTY PUD-BAYO WWTP	LOS ALAMOS	NM	SLL	R	78471	30-SEP-13	57	0.000057
MC2	NM0020141	LOS ALAMOS COUNTY PUD-BAYO WWTP	LOS ALAMOS	NM	SLL	R	78471	30-SEP-13	17	0.000017
MC3	NM0020141	LOS ALAMOS COUNTY PUD-BAYO WWTP	LOS ALAMOS	NM	SLL	R	78471	31-DEC-13	57	0.000057
MC2	NM0020141	LOS ALAMOS COUNTY PUD-BAYO WWTP	LOS ALAMOS	NM	SLL	R	78471	31-DEC-13	17	0.000017
MC2	NM0020141	LOS ALAMOS COUNTY PUD-BAYO WWTP	LOS ALAMOS	NM	SLL	R	78471	31-MAR-13	17	0.000017
MC3	NM0020141	LOS ALAMOS COUNTY PUD-BAYO WWTP	LOS ALAMOS	NM	SLL	R	78471	31-MAR-13	57	0.000057
MQ2	NY0022128	GREAT NECK (V) WPCP	GREAT NECK	NY	001	G	71900	28-FEB-13	82.539683	8.25397E-05
MQ2	NY0022128	GREAT NECK (V) WPCP	GREAT NECK	NY	001	G	71900	31-DEC-13	132.87982	0.00013288
MQ2	NY0022128	GREAT NECK (V) WPCP	GREAT NECK	NY	001	G	71900	31-JAN-13	247.16553	0.000247166
MQ2	NY0022128	GREAT NECK (V) WPCP	GREAT NECK	NY	001	G	71900	31-MAR-13	82.539683	8.25397E-05
MQ2	NY0022128	GREAT NECK (V) WPCP	GREAT NECK	NY	001	G	71900	31-MAY-13	12.335601	1.23356E-05
MC2	OH0007269	DOVER CHEMICAL CORP	DOVER	OH	801	5	76026	28-FEB-13	0.163	0.000000163
MC3	OH0007269	DOVER CHEMICAL CORP	DOVER	OH	801	5	76026	28-FEB-13	0.163	0.000000163
MC2	OH0007269	DOVER CHEMICAL CORP	DOVER	OH	801	5	76026	30-NOV-13	0.0055	5.5E-09
MC3	OH0007269	DOVER CHEMICAL CORP	DOVER	OH	801	5	76026	30-NOV-13	0.0055	5.5E-09
MC2	OH0007269	DOVER CHEMICAL CORP	DOVER	OH	801	5	76026	31-AUG-13	948	0.000948
MC3	OH0007269	DOVER CHEMICAL CORP	DOVER	OH	801	5	76026	31-AUG-13	948	0.000948

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC2	OH0007269	DOVER CHEMICAL CORP	DOVER	OH	901	6	76026	28-FEB-13	0.214	0.000000214
MC3	OH0007269	DOVER CHEMICAL CORP	DOVER	OH	901	6	76026	28-FEB-13	0.214	0.000000214
MC2	OH0007269	DOVER CHEMICAL CORP	DOVER	OH	901	6	76026	30-NOV-13	0.0044	4.4E-09
MC3	OH0007269	DOVER CHEMICAL CORP	DOVER	OH	901	6	76026	30-NOV-13	0.0044	4.4E-09
MC2	OH0007269	DOVER CHEMICAL CORP	DOVER	OH	901	6	76026	31-AUG-13	477.51	0.00047751
MC3	OH0007269	DOVER CHEMICAL CORP	DOVER	OH	901	6	76026	31-AUG-13	477.51	0.00047751
MC3_304M	OH0095338	EVERGREEN RECYCLING & DISPOSAL LF	NORTHWOOD	OH	003	1	01074	30-JUN-13	6200000	0.0062
MC2_304M	OH0095338	EVERGREEN RECYCLING & DISPOSAL LF	NORTHWOOD	OH	003	1	01074	30-JUN-13	6200000	0.0062
MC3_304M	OH0095338	EVERGREEN RECYCLING & DISPOSAL LF	NORTHWOOD	OH	003	1	01074	31-DEC-13	5100000	0.0051
MC2_304M	OH0095338	EVERGREEN RECYCLING & DISPOSAL LF	NORTHWOOD	OH	003	1	01074	31-DEC-13	5100000	0.0051
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	28-FEB-13	176.25	0.06627
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	28-FEB-13	200	0.0752
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	28-FEB-13	176.25	0.06627
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	28-FEB-13	200	0.0752
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-APR-13	162.6	0.0611376
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-APR-13	205	0.07708
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-APR-13	205	0.07708
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-APR-13	162.6	0.0611376
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-JUN-13	161.25	0.06063
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-JUN-13	161.25	0.06063
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-JUN-13	177	0.066552
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-JUN-13	177	0.066552
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-NOV-13	134.05	0.0504028

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-NOV-13	168	0.063168
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-NOV-13	168	0.063168
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-NOV-13	134.05	0.0504028
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-SEP-13	160	0.06016
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-SEP-13	126.38	0.04751888
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-SEP-13	160	0.06016
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	30-SEP-13	126.38	0.04751888
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-AUG-13	227	0.085352
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-AUG-13	227	0.085352
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-AUG-13	168.75	0.06345
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-AUG-13	168.75	0.06345
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-DEC-13	156.8	0.0589568
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-DEC-13	223	0.083848
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-DEC-13	156.8	0.0589568
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-DEC-13	223	0.083848
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-JAN-13	188	0.070688
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-JAN-13	173	0.065048
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-JAN-13	173	0.065048
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-JAN-13	188	0.070688
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-JUL-13	163	0.061288
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-JUL-13	182	0.068432
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-JUL-13	163	0.061288
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-JUL-13	182	0.068432
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-MAR-13	170	0.06392
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-MAR-13	150.5	0.056588
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-MAR-13	150.5	0.056588

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-MAR-13	170	0.06392
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-MAY-13	186	0.069936
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-MAY-13	186	0.069936
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-MAY-13	157.5	0.05922
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-MAY-13	157.5	0.05922
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-OCT-13	188	0.070688
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-OCT-13	188	0.070688
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-OCT-13	135.82	0.05106832
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	005	1	50050	31-OCT-13	135.82	0.05106832
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	28-FEB-13	46.9	0.449771
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	28-FEB-13	46.9	0.449771
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	28-FEB-13	46.9	0.449771
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	28-FEB-13	46.9	0.449771
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-APR-13	50.8	0.487172
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-APR-13	47.23	0.4529357
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-APR-13	50.8	0.487172
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-APR-13	47.23	0.4529357
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-JUN-13	42.03	0.4030677
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-JUN-13	44.8	0.429632
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-JUN-13	42.03	0.4030677
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-JUN-13	44.8	0.429632
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-NOV-13	54.4	0.521696
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-NOV-13	45.23	0.4337557
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-NOV-13	45.23	0.4337557
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-NOV-13	54.4	0.521696
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-SEP-13	34.15	0.3274985



**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-SEP-13	41.7	0.399903
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-SEP-13	41.7	0.399903
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	30-SEP-13	34.15	0.3274985
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-AUG-13	42	0.40278
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-AUG-13	36.13	0.3464867
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-AUG-13	36.13	0.3464867
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-AUG-13	42	0.40278
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-DEC-13	69.68	0.6682312
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-DEC-13	143	1.37137
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-DEC-13	69.68	0.6682312
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-DEC-13	143	1.37137
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-JAN-13	68.5	0.656915
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-JAN-13	59.35	0.5691665
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-JAN-13	68.5	0.656915
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-JAN-13	59.35	0.5691665
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-JUL-13	42.8	0.410452
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-JUL-13	41.25	0.3955875
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-JUL-13	42.8	0.410452
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-JUL-13	41.25	0.3955875
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-MAR-13	40.7	0.390313
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-MAR-13	40.7	0.390313
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-MAR-13	40.7	0.390313
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-MAR-13	40.7	0.390313
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-MAY-13	34.55	0.3313345
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-MAY-13	34.55	0.3313345
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-MAY-13	44.2	0.423878

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-MAY-13	44.2	0.423878
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-OCT-13	32.95	0.3159905
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-OCT-13	40.1	0.384559
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-OCT-13	40.1	0.384559
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	006	1	50050	31-OCT-13	32.95	0.3159905
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	28-FEB-13	1.75	0.2065
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	28-FEB-13	1.93	0.22774
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	28-FEB-13	1.75	0.2065
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	28-FEB-13	1.93	0.22774
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-APR-13	2.02	0.23836
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-APR-13	2.2	0.2596
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-APR-13	2.2	0.2596
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-APR-13	2.02	0.23836
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-JUN-13	1.645	0.19411
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-JUN-13	1.645	0.19411
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-JUN-13	1.71	0.20178
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-JUN-13	1.71	0.20178
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-NOV-13	2.23	0.26314
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-NOV-13	1.95	0.2301
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-NOV-13	1.95	0.2301
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-NOV-13	2.23	0.26314
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-SEP-13	3.63	0.42834
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-SEP-13	2.56	0.30208
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-SEP-13	3.63	0.42834
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	30-SEP-13	2.56	0.30208
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-AUG-13	1.7	0.2006

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-AUG-13	1.78	0.21004
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-AUG-13	1.78	0.21004
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-AUG-13	1.7	0.2006
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-DEC-13	2.55	0.3009
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-DEC-13	1.67	0.19706
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-DEC-13	1.67	0.19706
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-DEC-13	2.55	0.3009
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-JAN-13	4.89	0.57702
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-JAN-13	2.82	0.33276
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-JAN-13	4.89	0.57702
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-JAN-13	2.82	0.33276
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-JUL-13	1.525	0.17995
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-JUL-13	2.02	0.23836
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-JUL-13	2.02	0.23836
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-JUL-13	1.525	0.17995
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-MAR-13	2.8	0.3304
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-MAR-13	3.43	0.40474
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-MAR-13	2.8	0.3304
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-MAR-13	3.43	0.40474
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-MAY-13	3.605	0.42539
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-MAY-13	5.02	0.59236
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-MAY-13	3.605	0.42539
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-MAY-13	5.02	0.59236
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-OCT-13	2.35	0.2773
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-OCT-13	2.215	0.26137
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-OCT-13	2.35	0.2773

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	008	1	50050	31-OCT-13	2.215	0.26137
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	28-FEB-13	6.818	0.1356782
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	28-FEB-13	9.55	0.190045
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	28-FEB-13	6.818	0.1356782
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	28-FEB-13	9.55	0.190045
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-APR-13	13.7	0.27263
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-APR-13	13.7	0.27263
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-APR-13	6.696	0.1332504
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-APR-13	6.696	0.1332504
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-JUN-13	6.23	0.123977
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-JUN-13	6.23	0.123977
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-JUN-13	4.963	0.0987637
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-JUN-13	4.963	0.0987637
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-NOV-13	5.803	0.1154797
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-NOV-13	10.2	0.20298
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-NOV-13	10.2	0.20298
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-NOV-13	5.803	0.1154797
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-SEP-13	6.45	0.128355
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-SEP-13	5.045	0.1003955
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-SEP-13	6.45	0.128355
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	30-SEP-13	5.045	0.1003955
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-AUG-13	6.22	0.123778
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-AUG-13	4.585	0.0912415
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-AUG-13	6.22	0.123778
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-AUG-13	4.585	0.0912415
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-DEC-13	7.14	0.142086

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-DEC-13	4.802	0.0955598
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-DEC-13	7.14	0.142086
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-DEC-13	4.802	0.0955598
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-JAN-13	21.8	0.43382
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-JAN-13	9.53	0.189647
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-JAN-13	21.8	0.43382
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-JAN-13	9.53	0.189647
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-JUL-13	6.35	0.126365
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-JUL-13	4.468	0.0889132
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-JUL-13	4.468	0.0889132
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-JUL-13	6.35	0.126365
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-MAR-13	5.565	0.1107435
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-MAR-13	6.59	0.131141
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-MAR-13	6.59	0.131141
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-MAR-13	5.565	0.1107435
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-MAY-13	10.6	0.21094
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-MAY-13	6.865	0.1366135
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-MAY-13	10.6	0.21094
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-MAY-13	6.865	0.1366135
MQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-OCT-13	12.6	0.25074
FQ2_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-OCT-13	12.6	0.25074
MQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-OCT-13	6.448	0.1283152
FQ1_304M	PA0094510	EDGAR THOMSON PLT	BRADDOCK	PA	009	1	50050	31-OCT-13	6.448	0.1283152
MQ2_304M	PR0024007	PRASA WTP SABANA GRANDE	SABANA GRANDE	PR	001	1	50050	31-DEC-13	30	0.3
MC3	SC0021598	MONCKS CORNER WWTF	MONCKS CORNER	SC	001	1	71901	31-MAR-13	14.3	0.0000143

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC2	SC0048381	REWA/SLUDGE PERMIT	GREENVILLE	SC	001	P	78471	30-JUN-13	1.15	0.00000115
MC2	SC0048381	REWA/SLUDGE PERMIT	GREENVILLE	SC	002	P	78471	31-AUG-13	1.14	0.00000114
MC2	SC0048381	REWA/SLUDGE PERMIT	GREENVILLE	SC	002	P	78471	31-MAY-13	1.44	0.00000144
MC2	SC0048381	REWA/SLUDGE PERMIT	GREENVILLE	SC	003	P	78471	31-AUG-13	1	0.000001
MC2	SC0048381	REWA/SLUDGE PERMIT	GREENVILLE	SC	004	P	78471	28-FEB-13	1.37	0.00000137
MC2	SC0048381	REWA/SLUDGE PERMIT	GREENVILLE	SC	008	P	78471	31-JUL-13	1.21	0.00000121
MC2	SC0048381	REWA/SLUDGE PERMIT	GREENVILLE	SC	008	P	78471	31-MAR-13	1.03	0.00000103
MC2	SC0048381	REWA/SLUDGE PERMIT	GREENVILLE	SC	009	P	78471	28-FEB-13	1.46	0.00000146
MC2	SC0048381	REWA/SLUDGE PERMIT	GREENVILLE	SC	009	P	78471	31-MAY-13	2.04	0.00000204
MC3	SC0048461	GSW&SA/YAUHANNAH TREE FARM	CONWAY	SC	003	1	71900	31-MAR-13	1	0.000001
MC3_304M	TN0002356	ABIBOW US INC - CALHOUN OPERATIONS	CALHOUN	TN	001	1	71900	28-FEB-13	0.0002	0.0001
MC3_304M	TN0002356	ABIBOW US INC - CALHOUN OPERATIONS	CALHOUN	TN	001	1	71900	30-APR-13	0.0002	0.0001
MC3_304M	TN0002356	ABIBOW US INC - CALHOUN OPERATIONS	CALHOUN	TN	001	1	71900	30-JUN-13	0.0002	0.0001
MC3_304M	TN0002356	ABIBOW US INC - CALHOUN OPERATIONS	CALHOUN	TN	001	1	71900	30-SEP-13	0.0602	0.0001
MC3_304M	TN0002356	ABIBOW US INC - CALHOUN OPERATIONS	CALHOUN	TN	001	1	71900	31-MAR-13	0.0002	0.0001
MC3_304M	TN0002356	ABIBOW US INC - CALHOUN OPERATIONS	CALHOUN	TN	001	1	71900	31-MAY-13	0.0002	0.0001
MC3	TN0002356	ABIBOW US INC - CALHOUN OPERATIONS	CALHOUN	TN	006	1	71900	30-NOV-13	5.3	0.0000053
MC3	TN0020711	MAYNARD C. STILES	MEMPHIS	TN	001	1	03610	31-DEC-13	0.102	0.000000102
MC2	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	28-FEB-13	1.39	0.00000139
MC3	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	28-FEB-13	1.39	0.00000139

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC3	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	30-APR-13	7.09	0.00000709
MC2	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	30-APR-13	7.09	0.00000709
MC3	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	30-JUN-13	7.45	0.00000745
MC2	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	30-JUN-13	7.45	0.00000745
MC3	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	30-NOV-13	2.43	0.00000243
MC2	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	30-NOV-13	2.43	0.00000243
MC3	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	30-SEP-13	7.93	0.00000793
MC2	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	30-SEP-13	7.93	0.00000793
MC2	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	31-AUG-13	12.7	0.0000127
MC3	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	31-AUG-13	12.7	0.0000127
MC3	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	31-DEC-13	1.64	0.00000164
MC2	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	31-DEC-13	1.64	0.00000164
MC2	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	31-JUL-13	9.13	0.00000913
MC3	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	31-JUL-13	9.13	0.00000913
MC3	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	31-MAY-13	7.22	0.00000722
MC2	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	31-MAY-13	7.22	0.00000722
MC3	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	31-OCT-13	1.62	0.00000162

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC2	TN0078905	HALLSDALE-POWELL UTILITY DISTRICT	KNOXVILLE	TN	001	1	71900	31-OCT-13	1.62	0.00000162
MC1_304M	TX0006017	OXEA BAY CITY PLANT	BAY CITY	TX	001	1	50060	28-FEB-13	55	0
MC1_304M	TX0006017	OXEA BAY CITY PLANT	BAY CITY	TX	001	1	50060	30-APR-13	30	0
MC1_304M	TX0006017	OXEA BAY CITY PLANT	BAY CITY	TX	001	1	50060	30-JUN-13	10	0
MC1_304M	TX0006017	OXEA BAY CITY PLANT	BAY CITY	TX	001	1	50060	30-NOV-13	360	0
MC1_304M	TX0006017	OXEA BAY CITY PLANT	BAY CITY	TX	001	1	50060	30-SEP-13	270	0
MC1_304M	TX0006017	OXEA BAY CITY PLANT	BAY CITY	TX	001	1	50060	31-AUG-13	160	0
MC1_304M	TX0006017	OXEA BAY CITY PLANT	BAY CITY	TX	001	1	50060	31-DEC-13	20	0
MC1_304M	TX0006017	OXEA BAY CITY PLANT	BAY CITY	TX	001	1	50060	31-JAN-13	80	0
MC1_304M	TX0006017	OXEA BAY CITY PLANT	BAY CITY	TX	001	1	50060	31-JUL-13	60	0
MC1_304M	TX0006017	OXEA BAY CITY PLANT	BAY CITY	TX	001	1	50060	31-MAR-13	30	0
MC1_304M	TX0006017	OXEA BAY CITY PLANT	BAY CITY	TX	001	1	50060	31-MAY-13	50	0
MC1_304M	TX0006017	OXEA BAY CITY PLANT	BAY CITY	TX	001	1	50060	31-OCT-13	290	0
MC3	TX0077232	CIBOLO CREEK MUNICIPAL AUTHORITY WWTP	SCHERTZ	TX	SO1	S	71900	31-AUG-13	1.12	0.00000112
MC2	UT0020001	SNYDERVILLE BASIN WATER RECLAMATION DISTRICT	PARK CITY	UT	001	1	71900	30-SEP-13	5	0.000005
MC3	UT0020001	SNYDERVILLE BASIN WATER RECLAMATION DISTRICT	PARK CITY	UT	001	1	71900	30-SEP-13	5	0.000005
MC2_304M	UT0022403	JORDANELLE SSD	HEBER CITY	UT	001	1	71901	31-OCT-13	0.6	0.0000006
MC3_304M	UT0022403	JORDANELLE SSD	HEBER CITY	UT	001	1	71901	31-OCT-13	0.6	0.0000006
MC3	WI0036587	BAD RIVER BAND	ODANAH	WI	002	1	71900	31-DEC-13	200	0.0002
MQ2_304M	WV0001279	CHEMOURS COMPANY FC LLC	WASHINGTON	WV	002	1	39700	31-JUL-13	0.0453583	0
MQ1_304M	WV0001279	CHEMOURS COMPANY FC LLC	WASHINGTON	WV	002	1	39700	31-JUL-13	0.0453583	0
MQ1_304M	WV0001279	CHEMOURS COMPANY FC LLC	WASHINGTON	WV	005	1	39700	31-JUL-13	0.2428798	0
MQ2_304M	WV0001279	CHEMOURS COMPANY FC LLC	WASHINGTON	WV	005	1	39700	31-JUL-13	0.2428798	0
MQ2_304M	WV0001279	CHEMOURS COMPANY FC LLC	WASHINGTON	WV	105	1	39700	31-JUL-13	0.0101587	0



**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MQ1_304M	WV0001279	CHEMOURS COMPANY FC LLC	WASHINGTON	WV	105	1	39700	31-JUL-13	0.0101587	0
MC3_304M	WV0004707	GRAFTECH INTERNATIONAL HOLDING	ANMOORE	WV	026	1	00978	31-JUL-13	2.48	0.00083
MC2_304M	WV0004707	GRAFTECH INTERNATIONAL HOLDING	ANMOORE	WV	026	1	00978	31-JUL-13	2.48	0.00083
FC3_304M	WV0004707	GRAFTECH INTERNATIONAL HOLDING	ANMOORE	WV	026	1	50050	31-JUL-13	4.99	0.00719
FC2_304M	WV0004707	GRAFTECH INTERNATIONAL HOLDING	ANMOORE	WV	026	1	50050	31-JUL-13	4.99	0.00719
FC3_304M	WV0004707	GRAFTECH INTERNATIONAL HOLDING	ANMOORE	WV	036	1	50050	31-JUL-13	14.3	0.0206
FC2_304M	WV0004707	GRAFTECH INTERNATIONAL HOLDING	ANMOORE	WV	036	1	50050	31-JUL-13	14.3	0.0206
FC3_304M	WV0004707	GRAFTECH INTERNATIONAL HOLDING	ANMOORE	WV	037	1	50050	31-JUL-13	14.3	0.0206
FC2_304M	WV0004707	GRAFTECH INTERNATIONAL HOLDING	ANMOORE	WV	037	1	50050	31-JUL-13	14.3	0.0206
FC3_304M	WV0073679	CLEARON CORP	SOUTH CHARLESTON	WV	001	1	50050	31-MAR-13	910	0.91
FC2_304M	WV0073679	CLEARON CORP	SOUTH CHARLESTON	WV	001	1	50050	31-MAR-13	863	0.863
FC2_304M	WV0073679	CLEARON CORP	SOUTH CHARLESTON	WV	001	1	50050	31-MAY-13	802.7	0.803
FC3_304M	WV0078719	ED AREY & SONS INC.	BUCKHANNON	WV	001	1	50050	30-APR-13	180	0.00018
FC2_304M	WV0078719	ED AREY & SONS INC.	BUCKHANNON	WV	001	1	50050	30-APR-13	180	0.00018
MC3_304M	WV0078719	ED AREY & SONS INC.	BUCKHANNON	WV	001	1	50050	30-APR-13	180	0.00018
MC2_304M	WV0078719	ED AREY & SONS INC.	BUCKHANNON	WV	001	1	50050	30-APR-13	180	0.00018
FC2_304M	WV0078719	ED AREY & SONS INC.	BUCKHANNON	WV	002	1	50050	30-APR-13	220	0.00022
MC3_304M	WV0078719	ED AREY & SONS INC.	BUCKHANNON	WV	002	1	50050	30-APR-13	220	0.00022
MC2_304M	WV0078719	ED AREY & SONS INC.	BUCKHANNON	WV	002	1	50050	30-APR-13	220	0.00022
FC3_304M	WV0078719	ED AREY & SONS INC.	BUCKHANNON	WV	002	1	50050	30-APR-13	220	0.00022
MC3_304M	WV0078719	ED AREY & SONS INC.	BUCKHANNON	WV	003	1	50050	30-APR-13	250	0.00025

**Table D-1. Corrections Made to the 2013 DMR Data**

Type of Change	NPID	Facility Name	City	State	DSCH	MLOC	PRAM	Date	Old Value	New Value
MC2_304M	WV0078719	ED AREY & SONS INC.	BUCKHANNON	WV	003	1	50050	30-APR-13	250	0.00025
FC2_304M	WV0078719	ED AREY & SONS INC.	BUCKHANNON	WV	003	1	50050	30-APR-13	250	0.00025
FC3_304M	WV0078719	ED AREY & SONS INC.	BUCKHANNON	WV	003	1	50050	30-APR-13	250	0.00025
MC3	WV0082759	BERKELEY COUNTY PSSD - OPEQ/HEDGEVILLE/INWOOD/B AKER	MARTINSBURG	WV	004	A	71900	31-JUL-13	2.53	0.00000253
MC2	WV0082759	BERKELEY COUNTY PSSD - OPEQ/HEDGEVILLE/INWOOD/B AKER	MARTINSBURG	WV	004	A	71900	31-JUL-13	2.53	0.00000253

**Table D-2. Corrections Made to the 2013 TRI Data**

Type of Change	TRIFID	Facility Name	Facility City	Facility State	Discharge Type	Chemical	Old Value	New Value	Units
Dioxin Distribution	3676WNTRNT76HIG	INTERNATIONAL PAPER PINE HILL MILL	Pine Hill	AL	Direct	Dioxin and Dioxin Like Compounds	683,479	480	TWPE*
Dioxin Distribution	29442NTRNTKAMIN	INTERNATIONAL PAPER GEORGETOWN MILL	Georgetown	SC	Direct	Dioxin and Dioxin Like Compounds – Congener 2,3,7,8-Tetrachlorodibenzo- p-dioxin	0.000815	0	Pounds
Load	26037WHLNGROUT	MOUNTAIN STATE CARBON LLC	Follansbee	WV	Direct	Polycyclic aromatic compounds	690	15	Pounds
Load	46402SSGRYONENO	USS GARY WORKS	Gary	IN	Direct	Lead and lead compounds	8086.9	350.63	Pounds
Load	70805XXNCH499S	EXXONMOBIL CHEMICAL BATON ROUGE CHEMICAL PLANT	Baton Rouge	LA	Direct	Polycyclic aromatic compounds	519.6	0	Pounds
Load	55720PTLTCNORTH	SAPPI CLOQUET LLC	Cloquet	MN	Indirect	Hydrogen sulfide	175,000	385	Pounds

\* Facility reported incorrect dioxin distribution. Since the TWFs are specific to each dioxin congener, correcting the distribution affected the TWPE, but did not change the total pounds of dioxin and dioxin like compounds.

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**APPENDIX E**

**RESULTS OF THE *TRILTOutput2013* AND *DMRLTOutput2013* DATABASES**

Table E-1: Category Rankings by TWPE from *TRILTOutput2013*

Table E-2: Category Rankings by TWPE from *DMRLTOutput2013*

Table E-3: NAICS Code Rankings by TWPE from *TRILTOutput2013*

Table E-4: SIC Code Rankings by TWPE from *DMRLTOutput2013*

Table E-5: Chemical Rankings by TWPE from *TRILTOutput2013*

Table E-6: Chemical Rankings by TWPE from *DMRLTOutput2013*

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**Table E-1. Category Rankings by TWPE from TRILTOOutput2013**

40 CFR Part or NAICS Group	Point Source Category	Type of Group	Number of Facilities	Total Pounds Released	TWPE (lb-eq/yr)
414.1	Chlorine and Chlorinated Hydrocarbons (CCH)	PNS	36	2,030,000	4,540,000
430	Pulp, paper and paperboard	PSC	229	19,200,000	2,190,000
415	Inorganic chemicals manufacturing	PSC	140	6,760,000	794,000
423	Steam electric power generating	PSC	322	3,310,000	489,000
419	Petroleum refining	PSC	279	22,200,000	419,000
406	Grain mills	PSC	31	2,070,000	179,000
414	Organic chemicals, plastics and synthetic fibers	PSC	654	24,200,000	333,000
420	Iron and steel manufacturing	PSC	215	34,700,000	84,600
440	Ore mining and dressing	PSC	32	738,000	82,700
432	Meat and Poultry Products	PSC	179	57,600,000	81,500
458	Carbon black manufacturing	PSC	4	688	63,800
433	Metal Finishing	PSC	1895	3,660,000	46,900
421	Nonferrous metals manufacturing	PSC	108	1,110,000	34,300
429	Timber products processing	PSC	107	29,200	22,500
455	Pesticide chemicals	PSC	51	3,150,000	19,000
97	National Security & International Affairs	NAICS	57	11,200,000	17,500
438	Metal Products and Machinery	PSC	73	310,000	17,400
600	Unassigned Waste Facility		44	418,000	13,000
471	Nonferrous metals forming and metal powders	PSC	110	1,140,000	12,300
424	Ferroalloy manufacturing	PSC	7	169,000	12,100
418	Fertilizer manufacturing	PSC	41	3,740,000	8,500
95	Environmental Quality & Housing	NAICS	4	126,000	7,790
428	Rubber Manufacturing	PSC	162	1,360,000	7,410
468	Copper forming	PSC	110	288,000	5,840
407	Canned and preserved fruits and vegetables processing	PSC	28	5,930,000	5,340
503	Miscellaneous Foods and Beverages	PNC	139	3,160,000	5,030
436	Mineral Mining and Processing	PSC	81	4,240,000	4,710
413	Electroplating	PSC	329	1,270,000	4,620
405	Dairy products processing	PSC	300	5,630,000	4,270
464	Metal molding and casting (foundries)	PSC	191	85,000	3,460
469	Electrical and electronic components	PSC	71	2,610,000	3,030

**Table E-1. Category Rankings by TWPE from TRILTOutput2013**

40 CFR Part or NAICS Group	Point Source Category	Type of Group	Number of Facilities	Total Pounds Released	TWPE (lb-eq/yr)
437	Centralized Waste Treatment	PSC	4	470,000	2,720
439	Pharmaceutical manufacturing	PSC	85	1,790,000	2,670
422	Phosphate manufacturing	PSC	8	49,700	2,340
410	Textile mills	PSC	46	1,800,000	2,210
463	Plastics molding and forming	PSC	119	3,400,000	1,830
425	Leather tanning and finishing	PSC	13	154,000	1,400
417	Soap and detergent manufacturing	PSC	70	91,000	1,260
457	Explosives manufacturing	PSC	9	67,600	1,130
461	Battery manufacturing	PSC	58	69,000	934
467	Aluminum forming	PSC	93	150,000	857
42	Trucking & Warehousing	NAICS	5	68.5	561
426	Glass manufacturing	PSC	60	145,000	522
409	Sugar processing	PSC	15	470,000	406
434	Coal mining	PSC	17	177,000	386
411	Cement manufacturing	PSC	117	3,160	381
445	Landfills	PSC	4	111	235
443	Paving and roofing materials (tars and asphalt)	PSC	21	89.8	190
408	Canned and preserved seafood processing	PSC	5	143,000	107
446	Paint formulating	PSC	48	33,400	94.8
444	Waste combustors	PSC	3	51.6	88.8
465	Coil coating	PSC	35	3,450	79.1
442	Transportation Equipment Cleaning	PSC	2	1,660	71.7
55	Automotive Dealers & Service Stations	NAICS	1	15,400	56.3
508	Printing & Publishing	PNC	48	19,200	27.6
20	Food & Kindred Products	NAICS	6	32,100	27.2
454	Gum and wood chemicals manufacturing	PSC	7	5,220	26.4
447	Ink formulating	PSC	10	14,600	19.6
46	Pipelines, Except Natural Gas	NAICS	1	214	13.2
50	Wholesale Trade- Durable Goods	NAICS	3	8.84	11.5
51	Wholesale Trade- Nondurable Goods	NAICS	2	11,200	8.4
466	Porcelain Enameling	PSC	5	63.8	7.82

**Table E-1. Category Rankings by TWPE from *TRILTOutput2013***

40 CFR Part or NAICS Group	Point Source Category	Type of Group	Number of Facilities	Total Pounds Released	TWPE (lb-eq/yr)
502	Tobacco Products	PNC	17	79,100	5.32
23	Apparel & Other Textile Products	NAICS	1	2,750	3.05
59	Miscellaneous Retail	NAICS	1	0.46	1.03
96	Administration Of Economic Programs	NAICS	2	0.248	0.554
92	Justice, Public Order, & Safety	NAICS	1	28.7	0.0318
39	Misc. Manuf. Industries	NAICS	1	5	0.0281

**Table E-2. Category Rankings by TWPE from *DMRLTOutput2013***

40 CFR Part or SIC Group	Point Source Category	Type of Group	Number of Facilities	Total LBY	Total TWPE
423	Steam electric power generating	PSC	562	7,530,000,000	3,330,000
501	Drinking Water Treatment	PNC	705	2,350,000,000	887,000
414.1	Chlorine and Chlorinated Hydrocarbons (CCH)	PNS	40	4,370,000,000	650,000
418	Fertilizer manufacturing	PSC	26	109,000,000	568,000
430	Pulp, paper and paperboard	PSC	163	1,250,000,000	309,000
414	Organic chemicals, plastics and synthetic fibers	PSC	338	1,250,000,000	301,000
419	Petroleum refining	PSC	241	3,360,000,000	242,000
420	Iron and steel manufacturing	PSC	89	144,000,000	188,000
421	Nonferrous metals manufacturing	PSC	31	95,700,000	187,000
445	Landfills	PSC	204	101,000,000	166,000
435	Oil & Gas Extraction	PSC	71	2,120,000,000	163,000
436	Mineral Mining and Processing	PSC	301	3,850,000,000	139,000
999	Superfund Sites		1	10,100	125,000
503	Miscellaneous Foods and Beverages	PNC	53	81,900,000	105,000
415	Inorganic chemicals manufacturing	PSC	122	1,570,000,000	94,200
410	Textile mills	PSC	53	33,000,000	89,500
70	Hotels & Other Lodging Places	SIC	234	51,500,000	78,100
433	Metal Finishing	PSC	298	1,660,000,000	73,500
437	Centralized Waste Treatment	PSC	18	2,260,000,000	59,700
440	Ore mining and dressing	PSC	57	518,000,000	57,700
79	Amusement & Recreation Services	SIC	64	48,100,000	56,400
45	Transportation by Air	SIC	2	192,000,000	48,100
434	Coal mining	PSC	138	278,000,000	40,200
600	Unassigned Waste Facility		68	211,000,000	34,000
409	Sugar processing	PSC	21	39,900,000	32,500
449	Airport Deicing	PSC	29	129,000,000	28,000
92	Justice, Public Order, & Safety	SIC	54	2,660,000	24,600
422	Phosphate manufacturing	PSC	11	23,800,000	23,900
406	Grain mills	PSC	25	18,400,000	22,300
65	Real Estate	SIC	448	62,400,000	17,200
97	National Security & International Affairs	SIC	46	20,700,000	10,500



**Table E-2. Category Rankings by TWPE from *DMRLTOutput2013***

40 CFR Part or SIC Group	Point Source Category	Type of Group	Number of Facilities	Total LBY	Total TWPE
82	Educational Services	SIC	346	21,400,000	9,390
432	Meat and Poultry Products	PSC	86	205,000,000	8,220
444	Waste combustors	PSC	11	462,000,000	7,210
439	Pharmaceutical manufacturing	PSC	41	49,700,000	6,500
463	Plastics molding and forming	PSC	33	609,000,000	6,030
411	Cement manufacturing	PSC	228	198,000,000	5,600
99	Non classifiable Establishments	SIC	76	18,700,000	5,400
428	Rubber Manufacturing	PSC	42	7,160,000	4,120
464	Metal molding and casting (foundries)	PSC	16	1,030,000	3,890
455	Pesticide chemicals	PSC	20	1,090,000	3,760
51	Wholesale Trade- Nondurable Goods	SIC	24	717,000	3,630
429	Timber products processing	PSC	56	42,300,000	2,980
468	Copper forming	PSC	16	4,750,000	2,440
508	Printing & Publishing	PNC	6	882,000	2,110
96	Administration of Economic Programs	SIC	21	889,000	2,020
438	Metal Products and Machinery	PSC	272	60,100,000	2,010
408	Canned and preserved seafood processing	PSC	18	133,000,000	1,710
84	Museums, Botanical, Zoological Gardens	SIC	12	5,030,000	1,710
49	Electric, Gas, & Sanitary Services	SIC	17	306,000	1,630
451	Concentrated Aquatic Animal Production	PSC	230	73,900,000	1,530
41	Local & Interurban Passenger Transit	SIC	10	2,380,000	1,360
442	Transportation Equipment Cleaning	PSC	23	1,040,000	1,270
471	Nonferrous metals forming and metal powders	PSC	17	815,000	1,070
89	Services, Not Elsewhere Classified	SIC	123	262,000	1,050
20	Food & Kindred Products	SIC	8	333,000	1,000
17	Special Trade Contractors	SIC	6	7,870,000	798
95	Environmental Quality & Housing	SIC	65	3,710,000	675
407	Canned and preserved fruits and vegetables processing	PSC	30	53,200,000	660
467	Aluminum forming	PSC	17	2,210,000	657
507	Independent and Stand Alone Labs	PNC	15	60,600,000	542
460	Hospital	PSC	83	271,000	536

**Table E-2. Category Rankings by TWPE from *DMRLTOutput2013***

40 CFR Part or SIC Group	Point Source Category	Type of Group	Number of Facilities	Total LBY	Total TWPE
75	Auto Repair, Services, & Parking	SIC	27	152,000	526
425	Leather tanning and finishing	PSC	2	486,000	506
15	General Building Contractors	SIC	7	87,700	504
42	Trucking & Warehousing	SIC	58	9,680,000	493
405	Dairy products processing	PSC	36	27,400,000	481
87	Engineering & Management Services	SIC	9	847,000	450
457	Explosives manufacturing	PSC	4	12,100,000	386
50	Wholesale Trade- Durable Goods	SIC	19	541,000	318
424	Ferroalloy manufacturing	PSC	3	915,000	283
86	Membership Organizations	SIC	27	16,200	259
461	Battery manufacturing	PSC	1	12,000	227
16	Heavy Construction, Except Building	SIC	2	206,000	184
469	Electrical and electronic components	PSC	5	1,150,000	171
417	Soap and detergent manufacturing	PSC	4	1,350,000	148
450	Construction and Development	PSC	10	431,000	140
426	Glass manufacturing	PSC	23	5,790,000	133
13	Natural Gas Liquids	SIC	19	1,900,000	129
55	Automotive Dealers & Service Stations	SIC	48	64,900	128
443	Paving and roofing materials (tars and asphalt)	PSC	22	5,840,000	93.6
73	Business Services	SIC	9	247,000	68.2
91	Executive, Legislative, & General	SIC	6	1,880,000	67.1
454	Gum and wood chemicals manufacturing	PSC	8	1,720,000	62.4
1	Agricultural Production - Crops	SIC	10	23,200,000	45
72	Personal Services- SIC 72	SIC	14	31,300	44.8
505	Food Service Establishments	PNC	20	2,850	35.5
54	Food Stores	SIC	10	902	31.9
46	Pipelines, Except Natural Gas	SIC	8	27,500	31.5
26	Paper & Allied Products	SIC	5	3,560,000	26.6
47	Transportation Services	SIC	6	29,400	23.4
83	Social Services	SIC	27	18,800	20.6
60	Depository Institutions	SIC	2	2,780	12.8

**Table E-2. Category Rankings by TWPE from *DMRLTOutput2013***

40 CFR Part or SIC Group	Point Source Category	Type of Group	Number of Facilities	Total LBY	Total TWPE
2	Agricultural Production - Livestock	SIC	2	119,000	12
88	Private Households	SIC	10	23,800	7.58
7	Agricultural Services	SIC	4	3,780	6.74
53	General Merchandise Stores	SIC	2	195	5.85
24	Lumber & Wood Products	SIC	8	34,700	4.44
412	CAFO	PSC	4	4,110,000	1.49
427	Asbestos manufacturing	PSC	1	10,300	0.589
446	Paint formulating	PSC	3	1,470	0.437
9	Fishing, Hunting, & Trapping	SIC	5	416,000	0.281
48	Communications	SIC	4	44.9	0.278
76	Miscellaneous Repair Services	SIC	1	1,920	0.2
502	Tobacco Products	PNC	1	996	0.167
44	Water Transportation	SIC	4	36,300	0.134
458	Carbon black manufacturing	PSC	2	4,330	0.0998
465	Coil coating	PSC	2	8,090	0.0925
67	Holding & Other Investment Offices	SIC	2	640	0.074
32	Stone, Clay, & Glass Products	SIC	5	93,200	0.054
59	Miscellaneous Retail	SIC	7	795,000	0.0439
52	Building Materials& Gardening Supplies	SIC	1	25.3	0.0321
447	Ink formulating	PSC	1	13,900	0.0103
58	Eating & Drinking Places	SIC	2	6.84	0.0000216
506	Industrial Laundries	PNC	1	94,100	0
23	Apparel & Other Textile Products	SIC	1	21.2	0

Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
486990	All Other Pipeline Transportation	1	1	0	0	64,200	1,780,000
325181	Alkalies and Chlorine Manufacturing	11	10	0	1	79,700	1,760,000
322130	Paperboard Mills	76	43	32	1	4,170,000	910,000
325188	All Other Basic Inorganic Chemical Manufacturing	104	39	40	25	4,970,000	717,000
322121	Paper (except Newsprint) Mills	81	70	7	4	9,060,000	645,000
325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing	121	27	83	11	1,720,000	620,000
322110	Pulp Mills	27	26	1	0	4,120,000	516,000
221112	Fossil Fuel Electric Power Generation	315	286	15	14	3,280,000	487,000
324110	Petroleum Refineries	122	87	20	15	22,300,000	416,000
325199	All Other Basic Organic Chemical Manufacturing	223	84	119	20	13,900,000	356,000
325211	Plastics Material and Resin Manufacturing	164	64	79	21	7,730,000	215,000
311221	Wet Corn Milling	22	5	9	8	1,750,000	179,000
326121	Unlaminated Plastics Profile Shape Manufacturing	8	2	6	0	72,800	125,000
331111	Iron and Steel Mills	100	69	6	25	25,600,000	68,100
322122	Newsprint Mills	9	9	0	0	1,140,000	57,700
212231	Lead Ore and Zinc Ore Mining	13	13	0	0	87,900	57,200
335991	Carbon and Graphite Product Manufacturing	19	8	8	3	22,700	57,000
311611	Animal (except Poultry) Slaughtering	30	13	16	1	24,200,000	55,500
325131	Inorganic Dye and Pigment Manufacturing	18	9	6	3	1,580,000	54,600
326112	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	3	1	2	0	21,200	29,400
325182	Carbon Black Manufacturing	3	3	0	0	255	24,200
311615	Poultry Processing	94	58	27	9	28,000,000	22,000
321114	Wood Preservation	70	52	4	14	6,770	21,400
325110	Petrochemical Manufacturing	27	20	7	0	1,410,000	20,900
322224	Uncoated Paper and Multiwall Bag Manufacturing	1	1	0	0	84,100	18,700
325120	Industrial Gas Manufacturing	14	6	8	0	52,900	18,500
325320	Pesticide and Other Agricultural Chemical Manufacturing	29	15	11	3	3,150,000	18,400
928110	National Security	57	35	13	9	11,200,000	17,500

Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	48	16	18	14	626,000	15,000
331411	Primary Smelting and Refining of Copper	2	1	1	0	6,750	13,000
212234	Copper Ore and Nickel Ore Mining	5	4	0	1	10,900	13,000
562211	Hazardous Waste Treatment and Disposal	43	17	21	5	401,000	12,900
331112	Electrometallurgical Ferroalloy Product Manufacturing	7	7	0	0	169,000	12,100
325992	Photographic Film, Paper, Plate, and Chemical Manufacturing	8	2	5	1	843,000	9,730
332992	Small Arms Ammunition Manufacturing	12	2	8	2	111,000	9,410
331221	Rolled Steel Shape Manufacturing	41	23	12	6	7,720,000	8,900
212299	All Other Metal Ore Mining	4	4	0	0	295,000	8,520
325311	Nitrogenous Fertilizer Manufacturing	28	21	2	5	3,720,000	8,180
924110	Administration of Air and Water Resource and Solid Waste Management Programs	2	1	1	0	110,000	7,790
331210	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	44	20	15	9	1,200,000	6,780
331312	Primary Aluminum Production	3	3	0	0	43,900	6,320
311411	Frozen Fruit, Juice, and Vegetable Manufacturing	11	5	6	0	5,820,000	5,260
332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	341	18	290	33	1,430,000	5,200
331421	Copper Rolling, Drawing, and Extruding	50	18	18	14	248,000	4,960
333111	Farm Machinery and Equipment Manufacturing	24	3	12	9	21,500	4,010
424710	Petroleum Bulk Stations and Terminals	123	94	18	11	323,000	3,800
325212	Synthetic Rubber Manufacturing	18	12	4	2	1,210,000	3,710
331419	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)	14	4	9	1	771,000	3,670
334514	Totalizing Fluid Meter and Counting Device Manufacturing	7	0	7	0	6,800	3,620
331311	Alumina Refining	2	1	1	0	70,500	3,360
327992	Ground or Treated Mineral and Earth Manufacturing	14	11	2	1	4,150,000	3,320
311999	All Other Miscellaneous Food Manufacturing	38	7	30	1	796,000	3,200
326211	Tire Manufacturing (except Retreading)	39	5	9	25	6,640	3,180
334413	Semiconductor and Related Device Manufacturing	69	4	63	2	2,610,000	3,000
336611	Ship Building and Repairing	17	10	3	4	14,000	2,990
331511	Iron Foundries	77	46	14	17	32,000	2,470

Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
311513	Cheese Manufacturing	92	24	66	2	3,210,000	2,410
325312	Phosphatic Fertilizer Manufacturing	8	7	1	0	49,700	2,340
311612	Meat Processed from Carcasses	21	4	17	0	2,930,000	2,240
332999	All Other Miscellaneous Fabricated Metal Product Manufacturing	77	13	52	12	69,800	2,150
332993	Ammunition (except Small Arms) Manufacturing	7	4	3	0	199,000	2,100
324199	All Other Petroleum and Coal Products Manufacturing	12	8	2	2	28,900	2,080
212221	Gold Ore Mining	8	5	2	1	345,000	2,030
334412	Bare Printed Circuit Board Manufacturing	99	2	85	12	100,000	1,980
325412	Pharmaceutical Preparation Manufacturing	47	4	40	3	1,110,000	1,920
311613	Rendering and Meat Byproduct Processing	31	15	14	2	2,370,000	1,780
331423	Secondary Smelting, Refining, and Alloying of Copper	10	5	1	4	3,920	1,780
221122	Electric Power Distribution	6	4	2	0	21,900	1,730
322291	Sanitary Paper Product Manufacturing	7	3	4	0	65,200	1,680
336111	Automobile Manufacturing	24	1	21	2	200,000	1,540
325192	Cyclic Crude and Intermediate Manufacturing	10	7	3	0	340,000	1,530
325132	Synthetic Organic Dye and Pigment Manufacturing	18	2	16	0	420,000	1,450
316110	Leather and Hide Tanning and Finishing	13	1	11	1	154,000	1,400
312120	Breweries	16	5	10	1	1,720,000	1,310
325613	Surface Active Agent Manufacturing	30	3	23	4	80,900	1,250
333613	Mechanical Power Transmission Equipment Manufacturing	8	1	5	2	694	1,140
325920	Explosives Manufacturing	9	6	1	2	67,600	1,130
331314	Secondary Smelting and Alloying of Aluminum	34	23	4	7	1,810	1,050
326113	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	21	3	15	3	818,000	970
313311	Broadwoven Fabric Finishing Mills	6	3	3	0	1,290,000	965
331491	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	29	10	9	10	463,000	950
331222	Steel Wire Drawing	34	8	17	9	198,000	920
336350	Motor Vehicle Transmission and Power Train Parts Manufacturing	36	0	28	8	62,600	905
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	103	45	53	5	133,000	846

Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
335929	Other Communication and Energy Wire Manufacturing	29	3	11	15	2,200	801
333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	48	5	35	8	9,180	714
336112	Light Truck and Utility Vehicle Manufacturing	15	0	15	0	152,000	674
332111	Iron and Steel Forging	36	12	14	10	3,010	656
327124	Clay Refractory Manufacturing	1	1	0	0	6.5	654
311511	Fluid Milk Manufacturing	126	1	125	0	802,000	639
333911	Pump and Pumping Equipment Manufacturing	21	8	8	5	1,290	635
325222	Noncellulosic Organic Fiber Manufacturing	9	6	3	0	634,000	590
336991	Motorcycle, Bicycle, and Parts Manufacturing	4	0	3	1	5,910	583
332410	Power Boiler and Heat Exchanger Manufacturing	13	5	8	0	477,000	580
311512	Creamery Butter Manufacturing	9	3	6	0	767,000	573
493190	Other Warehousing and Storage	4	4	0	0	68.5	561
311514	Dry, Condensed, and Evaporated Dairy Product Manufacturing	54	7	43	4	741,000	553
336411	Aircraft Manufacturing	13	0	7	6	26,000	550
335911	Storage Battery Manufacturing	39	2	22	15	66,900	522
331422	Copper Wire (except Mechanical) Drawing	18	4	3	11	1,200	485
339999	All Other Miscellaneous Manufacturing	20	3	13	4	134,000	483
325193	Ethyl Alcohol Manufacturing	14	6	7	1	387,000	479
321219	Reconstituted Wood Product Manufacturing	11	4	7	0	19,800	452
321113	Sawmills	15	14	1	0	228	438
334417	Electronic Connector Manufacturing	12	3	9	0	107,000	414
335912	Primary Battery Manufacturing	19	0	13	6	2,090	413
311313	Beet Sugar Manufacturing	15	12	1	2	470,000	406
331528	Other Nonferrous Foundries (except Die-Casting)	19	10	6	3	44,800	388
314110	Carpet and Rug Mills	12	1	9	2	25,300	382
332112	Nonferrous Forging	13	0	10	3	115,000	375
423930	Recyclable Material Merchant Wholesalers	3	1	1	1	56,000	374
325991	Custom Compounding of Purchased Resins	42	6	25	11	2,040	370
332722	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	33	2	28	3	92,000	340

Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
332911	Industrial Valve Manufacturing	18	3	7	8	1,780	333
332994	Small Arms Manufacturing	10	2	5	3	1,610	331
325314	Fertilizer (Mixing Only) Manufacturing	13	9	2	2	16,000	328
313312	Textile and Fabric Finishing (except Broadwoven Fabric) Mills	7	2	4	1	261,000	324
311119	Other Animal Food Manufacturing	8	3	4	1	312,000	313
321999	All Other Miscellaneous Wood Product Manufacturing	5	4	1	0	1,080	297
311111	Dog and Cat Food Manufacturing	9	2	5	2	318,000	276
325411	Medicinal and Botanical Manufacturing	12	3	9	0	325,000	263
212111	Bituminous Coal and Lignite Surface Mining	10	10	0	0	163,000	263
336412	Aircraft Engine and Engine Parts Manufacturing	58	8	34	16	76,100	251
336399	All Other Motor Vehicle Parts Manufacturing	68	3	50	15	43,500	250
562212	Solid Waste Landfill	3	1	1	1	4,960	247
327310	Cement Manufacturing	16	14	1	1	416	246
327999	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	9	2	7	0	44,300	233
331513	Steel Foundries (except Investment)	35	21	10	4	910	233
324191	Petroleum Lubricating Oil and Grease Manufacturing	22	8	12	2	41,100	232
327993	Mineral Wool Manufacturing	13	2	10	1	135,000	229
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	44	4	34	6	72,000	224
331315	Aluminum Sheet, Plate, and Foil Manufacturing	13	6	4	3	61,300	217
313210	Broadwoven Fabric Mills	1	0	0	1	175,000	208
332996	Fabricated Pipe and Pipe Fitting Manufacturing	26	10	11	5	9,560	206
327420	Gypsum Product Manufacturing	24	22	2	0	10.8	202
312130	Wineries	2	0	2	0	180,000	200
339115	Ophthalmic Goods Manufacturing	16	0	16	0	2,100	187
326299	All Other Rubber Product Manufacturing	46	4	34	8	68,700	187
324122	Asphalt Shingle and Coating Materials Manufacturing	12	5	4	3	56.7	183
325510	Paint and Coating Manufacturing	55	9	44	2	34,400	182
332913	Plumbing Fixture Fitting and Trim Manufacturing	17	2	10	5	3,360	177
311422	Specialty Canning	6	3	3	0	230,000	172



Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing	19	2	16	1	3,840	171
313320	Fabric Coating Mills	5	0	5	0	34,500	167
332116	Metal Stamping	22	3	15	4	65,000	162
331525	Copper Foundries (except Die-Casting)	13	6	6	1	221	157
332510	Hardware Manufacturing	18	0	12	6	14,100	154
326291	Rubber Product Manufacturing for Mechanical Use	18	4	11	3	40,200	145
326220	Rubber and Plastics Hoses and Belting Manufacturing	30	1	16	13	15,200	144
327212	Other Pressed and Blown Glass and Glassware Manufacturing	15	4	7	4	1,420	142
336414	Guided Missile and Space Vehicle Manufacturing	5	2	2	1	79.7	138
334416	Electronic Coil, Transformer, and Other Inductor Manufacturing	6	1	3	2	172,000	137
332618	Other Fabricated Wire Product Manufacturing	17	3	11	3	928	134
331319	Other Aluminum Rolling and Drawing	8	4	3	1	13,000	131
332312	Fabricated Structural Metal Manufacturing	34	26	8	0	1,330	130
327320	Ready-Mix Concrete Manufacturing	95	84	11	0	2,660	128
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	21	0	19	2	6,120	123
335932	Noncurrent-Carrying Wiring Device Manufacturing	12	0	5	7	5,840	122
212112	Bituminous Coal Underground Mining	6	6	0	0	14,000	122
333618	Other Engine Equipment Manufacturing	24	0	18	6	9,470	121
326199	All Other Plastics Product Manufacturing	27	2	20	5	83,000	121
331521	Aluminum Die-Casting Foundries	16	5	9	2	159	120
333120	Construction Machinery Manufacturing	23	7	15	1	5,880	117
336312	Gasoline Engine and Engine Parts Manufacturing	25	0	23	2	45,600	116
325221	Cellulosic Organic Fiber Manufacturing	2	2	0	0	140,000	114
337215	Showcase, Partition, Shelving, and Locker Manufacturing	10	1	8	1	2,350	114
333611	Turbine and Turbine Generator Set Units Manufacturing	16	3	9	4	987	111
339993	Fastener, Button, Needle, and Pin Manufacturing	3	1	2	0	3,020	110
333922	Conveyor and Conveying Equipment Manufacturing	7	5	1	1	739	109
327112	Vitreous China, Fine Earthenware, and Other Pottery Product Manufacturing	3	1	2	0	2,410	109

Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
327211	Flat Glass Manufacturing	9	2	3	4	1,100	109
311712	Fresh and Frozen Seafood Processing	5	5	0	0	143,000	107
333314	Optical Instrument and Lens Manufacturing	3	1	1	1	2,460	103
333411	Air Purification Equipment Manufacturing	2	0	2	0	1,250	102
311520	Ice Cream and Frozen Dessert Manufacturing	18	0	17	1	103,000	98.8
335313	Switchgear and Switchboard Apparatus Manufacturing	17	5	10	2	2,560	94.7
336370	Motor Vehicle Metal Stamping	24	6	15	3	4,760	94.3
212222	Silver Ore Mining	2	2	0	0	1,260	92.3
332991	Ball and Roller Bearing Manufacturing	23	2	18	3	1,220	91.8
331524	Aluminum Foundries (except Die-Casting)	19	3	11	5	5,230	91.2
336311	Carburetor, Piston, Piston Ring, and Valve Manufacturing	8	0	7	1	1,540	88.9
562213	Solid Waste Combustors and Incinerators	2	2	0	0	44	88.7
339991	Gasket, Packing, and Sealing Device Manufacturing	12	3	7	2	21,500	88
325414	Biological Product (except Diagnostic) Manufacturing	18	2	16	0	68,300	86.1
335110	Electric Lamp Bulb and Part Manufacturing	6	0	5	1	15,000	82.9
332431	Metal Can Manufacturing	35	1	34	0	3,450	79.1
311919	Other Snack Food Manufacturing	14	1	13	0	104,000	77.1
326130	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	6	1	5	0	2,310,000	73.2
488320	Marine Cargo Handling	1	1	0	0	1,650	71
333132	Oil and Gas Field Machinery and Equipment Manufacturing	19	8	6	5	963	68.9
332919	Other Metal Valve and Pipe Fitting Manufacturing	12	1	7	4	123	68.3
332710	Machine Shops	11	5	5	1	73,200	67.7
313111	Yarn Spinning Mills	1	0	1	0	613	67.4
334418	Printed Circuit Assembly (Electronic Assembly) Manufacturing	50	0	49	1	6,300	66.7
339920	Sporting and Athletic Goods Manufacturing	7	0	6	1	34,400	66.1
331522	Nonferrous (except Aluminum) Die-Casting Foundries	2	0	2	0	910	64.2
331316	Aluminum Extruded Product Manufacturing	17	4	9	4	36,400	62
332721	Precision Turned Product Manufacturing	27	1	25	1	11,800	61
335228	Other Major Household Appliance Manufacturing	5	1	3	1	568	58

Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
332212	Hand and Edge Tool Manufacturing	9	0	6	3	9,520	57.7
335312	Motor and Generator Manufacturing	20	3	14	3	723	57.2
333992	Welding and Soldering Equipment Manufacturing	13	2	8	3	416	56.7
447190	Other Gasoline Stations	1	0	1	0	15,400	56.3
339112	Surgical and Medical Instrument Manufacturing	14	1	12	1	46,600	56.1
327410	Lime Manufacturing	6	6	0	0	7.09	49.1
212324	Kaolin and Ball Clay Mining	1	1	0	0	12.7	49.1
332213	Saw Blade and Handsaw Manufacturing	2	0	2	0	24,400	47.3
332811	Metal Heat Treating	15	0	13	2	23,600	47.3
332117	Powder Metallurgy Part Manufacturing	22	4	15	3	326	46.7
314992	Tire Cord and Tire Fabric Mills	4	0	2	2	3,070	46.3
336391	Motor Vehicle Air-Conditioning Manufacturing	6	0	4	2	6,830	45.7
334419	Other Electronic Component Manufacturing	20	1	18	1	7,710	44.4
333512	Machine Tool (Metal Cutting Types) Manufacturing	4	0	3	1	45,500	42.9
322299	All Other Converted Paper Product Manufacturing	4	1	3	0	36,700	42.8
336360	Motor Vehicle Seating and Interior Trim Manufacturing	5	1	3	1	1,170	42.4
326150	Urethane and Other Foam Product (except Polystyrene) Manufacturing	2	1	1	0	52,900	39.7
336330	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	13	1	11	1	7,270	38.6
311222	Soybean Processing	26	2	24	0	15,600	36.8
562219	Other Nonhazardous Waste Treatment and Disposal	3	2	1	0	11,800	36.4
311412	Frozen Specialty Food Manufacturing	12	0	12	0	38,700	35.5
336510	Railroad Rolling Stock Manufacturing	5	0	3	2	276	34.4
336340	Motor Vehicle Brake System Manufacturing	7	0	5	2	17,100	33.8
325620	Toilet Preparation Manufacturing	21	0	21	0	18,200	33.5
332995	Other Ordnance and Accessories Manufacturing	3	1	2	0	7,610	31.2
335931	Current-Carrying Wiring Device Manufacturing	17	1	16	0	7,710	30.4
334411	Electron Tube Manufacturing	1	0	0	1	111	30.4
327910	Abrasive Product Manufacturing	4	0	4	0	34,500	29.6
336211	Motor Vehicle Body Manufacturing	14	0	12	2	3,120	28

Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
325191	Gum and Wood Chemical Manufacturing	7	5	2	0	5,220	26.4
325520	Adhesive Manufacturing	17	3	13	1	2,120	26.2
327215	Glass Product Manufacturing Made of Purchased Glass	14	0	12	2	7,320	25.5
335224	Household Laundry Equipment Manufacturing	2	0	2	0	2,570	23.5
333999	All Other Miscellaneous General Purpose Machinery Manufacturing	16	1	14	1	249,000	23.1
335921	Fiber Optic Cable Manufacturing	3	1	0	2	29.2	22.7
327122	Ceramic Wall and Floor Tile Manufacturing	1	0	1	0	4.79	22.6
312111	Soft Drink Manufacturing	4	0	4	0	29,700	22.2
327125	Nonclay Refractory Manufacturing	6	1	4	1	321	20.8
335222	Household Refrigerator and Home Freezer Manufacturing	6	1	4	1	7,350	20.6
325611	Soap and Other Detergent Manufacturing	47	1	45	1	6,380	19.9
339113	Surgical Appliance and Supplies Manufacturing	13	0	12	1	8,770	19.9
333295	Semiconductor Machinery Manufacturing	2	0	2	0	26,300	19.7
325910	Printing Ink Manufacturing	10	1	8	1	14,600	19.6
331512	Steel Investment Foundries	21	0	18	3	227	19.5
323111	Commercial Gravure Printing	25	2	22	1	7,150	18.8
335311	Power, Distribution, and Specialty Transformer Manufacturing	10	0	9	1	95.8	18.6
327121	Brick and Structural Clay Tile Manufacturing	3	1	1	1	254	18.2
332313	Plate Work Manufacturing	9	6	1	2	316	18.2
332912	Fluid Power Valve and Hose Fitting Manufacturing	12	1	10	1	5,330	18.1
311225	Fats and Oils Refining and Blending	5	1	4	0	18,700	18
335314	Relay and Industrial Control Manufacturing	13	2	9	2	617	17.6
336322	Other Motor Vehicle Electrical and Electronic Equipment Manufacturing	10	0	7	3	38.5	17.6
333315	Photographic and Photocopying Equipment Manufacturing	1	0	1	0	3,500	17.1
336120	Heavy Duty Truck Manufacturing	6	1	5	0	14,300	17
333924	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	8	2	4	2	60.5	16.6
322222	Coated and Laminated Paper Manufacturing	12	0	9	3	2,500	16.3
337127	Institutional Furniture Manufacturing	5	0	4	1	165	15.9
333912	Air and Gas Compressor Manufacturing	5	2	1	2	41.2	15.6

Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
334513	Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables	10	1	8	1	29.7	15
334519	Other Measuring and Controlling Device Manufacturing	5	0	5	0	5,390	14.8
335122	Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	4	0	3	1	13,000	14.5
311942	Spice and Extract Manufacturing	8	0	8	0	113,000	14.1
333515	Cutting Tool and Machine Tool Accessory Manufacturing	7	0	6	1	324	14.1
332420	Metal Tank (Heavy Gauge) Manufacturing	7	2	5	0	65.8	13.4
486910	Pipeline Transportation of Refined Petroleum Products	1	1	0	0	214	13.2
333913	Measuring and Dispensing Pump Manufacturing	2	1	0	1	5.47	12.3
334512	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	2	0	1	1	42.9	12.2
332214	Kitchen Utensil, Pot, and Pan Manufacturing	1	0	1	0	12,600	11.9
311340	Nonchocolate Confectionery Manufacturing	2	0	2	0	14,700	11.6
424690	Other Chemical and Allied Products Merchant Wholesalers	25	2	23	0	4,000	11.5
339995	Burial Casket Manufacturing	7	1	4	2	31.6	10.7
334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals	3	0	2	1	3,170	10.5
337214	Office Furniture (except Wood) Manufacturing	2	0	2	0	92.3	10.4
332322	Sheet Metal Work Manufacturing	9	2	7	0	1,230	9.62
311930	Flavoring Syrup and Concentrate Manufacturing	4	0	4	0	8,770	9.37
339950	Sign Manufacturing	5	0	5	0	8,350	9.21
326191	Plastics Plumbing Fixture Manufacturing	4	3	0	1	660	8.57
424430	Dairy Product (except Dried or Canned) Merchant Wholesalers	2	0	2	0	11,200	8.4
334517	Irradiation Apparatus Manufacturing	4	1	3	0	4,310	7.86
335221	Household Cooking Appliance Manufacturing	5	0	5	0	63.8	7.82
221113	Nuclear Electric Power Generation	1	1	0	0	3.4	7.62
333511	Industrial Mold Manufacturing	3	2	1	0	49.4	6.98
313113	Thread Mills	2	0	2	0	9,290	6.92
562920	Materials Recovery Facilities	2	0	2	0	7,030	6.72
313230	Nonwoven Fabric Mills	2	0	2	0	668	6.54

Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
327390	Other Concrete Product Manufacturing	4	2	2	0	64.1	6.48
333291	Paper Industry Machinery Manufacturing	3	0	3	0	5,550	6.19
332321	Metal Window and Door Manufacturing	4	0	3	1	8.52	6.05
323110	Commercial Lithographic Printing	15	0	15	0	7,180	6.04
333112	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	6	0	5	1	3,670	5.68
327213	Glass Container Manufacturing	6	2	3	1	15	5.48
334310	Audio and Video Equipment Manufacturing	3	1	2	0	61.1	5.48
312140	Distilleries	1	1	0	0	4,710	5.23
333996	Fluid Power Pump and Motor Manufacturing	6	0	6	0	16.6	5.07
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	1	1	0	0	4.5	4.72
324121	Asphalt Paving Mixture and Block Manufacturing	4	2	2	0	5.1	4.6
333293	Printing Machinery and Equipment Manufacturing	2	0	1	1	14.9	4.56
333131	Mining Machinery and Equipment Manufacturing	5	1	3	1	3,780	4.24
333994	Industrial Process Furnace and Oven Manufacturing	3	0	2	1	13	4.24
334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	6	1	5	0	4.9	4.22
326140	Polystyrene Foam Product Manufacturing	3	0	3	0	38.3	4.1
339992	Musical Instrument Manufacturing	4	0	4	0	5.57	3.95
335121	Residential Electric Lighting Fixture Manufacturing	1	0	1	0	4,990	3.73
334612	Prerecorded Compact Disc (except Software), Tape, and Record Reproducing	1	0	1	0	33.3	3.33
339911	Jewelry (except Costume) Manufacturing	3	0	3	0	927	3.09
311320	Chocolate and Confectionery Manufacturing from Cacao Beans	1	0	1	0	2,770	3.08
314911	Textile Bag Mills	1	0	1	0	2,750	3.05
332439	Other Metal Container Manufacturing	8	1	7	0	1,360	2.84
333923	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	4	1	3	0	934	2.68
312210	Tobacco Stemming and Redrying	3	0	3	0	15,000	2.58
336321	Vehicular Lighting Equipment Manufacturing	1	0	1	0	5.96	2.52
311421	Fruit and Vegetable Canning	2	1	1	0	3,030	2.42

Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
511191	Greeting Card Publishers	1	0	1	0	2,880	2.3
325612	Polish and Other Sanitation Good Manufacturing	19	1	18	0	3,840	2.3
333294	Food Product Machinery Manufacturing	8	0	8	0	16.8	2.25
323122	Prepress Services	9	0	9	0	923	2.25
311991	Perishable Prepared Food Manufacturing	1	0	1	0	2,830	2.12
333210	Sawmill and Woodworking Machinery Manufacturing	1	1	0	0	1.91	2.11
334119	Other Computer Peripheral Equipment Manufacturing	5	0	5	0	1.95	2.08
326192	Resilient Floor Covering Manufacturing	5	1	2	2	28	2.07
321911	Wood Window and Door Manufacturing	2	0	2	0	1,280	1.91
312229	Other Tobacco Product Manufacturing	11	1	10	0	15,900	1.79
336999	All Other Transportation Equipment Manufacturing	6	0	6	0	25.4	1.77
334510	Electromedical and Electrotherapeutic Apparatus Manufacturing	3	0	3	0	514	1.75
334415	Electronic Resistor Manufacturing	1	0	1	0	0.73	1.64
333298	All Other Industrial Machinery Manufacturing	4	0	4	0	6.51	1.56
213113	Support Activities for Coal Mining	1	1	0	0	14.9	1.43
311920	Coffee and Tea Manufacturing	2	0	2	0	1,740	1.41
334111	Electronic Computer Manufacturing	1	0	1	0	3.13	1.35
333513	Machine Tool (Metal Forming Types) Manufacturing	1	0	1	0	1,740	1.3
333991	Power-Driven Handtool Manufacturing	4	0	4	0	5.28	1.27
336212	Truck Trailer Manufacturing	3	2	1	0	27.1	1.21
332612	Spring (Light Gauge) Manufacturing	2	0	2	0	13.4	1.18
334290	Other Communications Equipment Manufacturing	5	0	5	0	0.561	1.04
446130	Optical Goods Stores	1	0	1	0	0.46	1.03
339114	Dental Equipment and Supplies Manufacturing	6	0	6	0	19.2	
212399	All Other Nonmetallic Mineral Mining	2	2	0	0	0.44	0.986
311423	Dried and Dehydrated Food Manufacturing	1	0	1	0	47.8	0.957
333514	Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	2	1	1	0	11.4	0.949
312221	Cigarette Manufacturing	3	0	2	1	48,200	0.941
326122	Plastics Pipe and Pipe Fitting Manufacturing	4	0	4	0	317	0.707

Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
327111	Vitreous China Plumbing Fixture and China and Earthenware Bathroom Accessories Manufacturing	3	2	1	0	17.5	0.702
488310	Port and Harbor Operations	1	1	0	0	11.5	0.684
311223	Other Oilseed Processing	7	0	7	0	21.4	0.641
212313	Crushed and Broken Granite Mining and Quarrying	1	1	0	0	0.9	0.567
927110	Space Research and Technology	2	1	1	0	0.248	0.554
337124	Metal Household Furniture Manufacturing	1	0	1	0	0.246	0.551
332611	Spring (Heavy Gauge) Manufacturing	1	1	0	0	6	0.51
311821	Cookie and Cracker Manufacturing	1	0	1	0	458	0.508
333995	Fluid Power Cylinder and Actuator Manufacturing	3	1	2	0	1.41	0.48
339111	Laboratory apparatus and furniture manufacturing	1	0	1	0	2.67	0.428
333414	Heating Equipment (except Warm Air Furnaces) Manufacturing	4	0	4	0	1.16	0.352
336992	Military Armored Vehicle, Tank, and Tank Component Manufacturing	1	1	0	0	5	0.35
322211	Corrugated and Solid Fiber Box Manufacturing	1	0	1	0	156	0.307
311330	Confectionery Manufacturing from Purchased Chocolate	1	0	1	0	397	0.296
334414	Electronic Capacitor Manufacturing	2	0	2	0	19,800	0.291
423830	Industrial Machinery and Equipment Merchant Wholesalers	1	0	1	0	3.83	0.271
323113	Commercial Screen Printing	2	0	2	0	1,060	0.267
321212	Softwood Veneer and Plywood Manufacturing	1	1	0	0	0.1	0.224
322215	Nonfolding Sanitary Food Container Manufacturing	1	0	1	0	153	0.169
333412	Industrial and Commercial Fan and Blower Manufacturing	2	0	2	0	1.76	0.164
321211	Hardwood Veneer and Plywood Manufacturing	1	0	1	0	63.1	0.143
333518	Other Metalworking Machinery Manufacturing	1	0	1	0	0.0878	0.122
311813	Frozen Cakes, Pies, and Other Pastries Manufacturing	2	0	2	0	139	0.121
335211	Electric Housewares and Household Fan Manufacturing	2	0	2	0	776	0.119
323117	Books Printing	2	0	2	0	542	0.115
332323	Ornamental and Architectural Metal Work Manufacturing	1	0	1	0	0.519	0.11
336214	Travel Trailer and Camper Manufacturing	3	0	3	0	7.77	0.108
323119	Other Commercial Printing	1	0	1	0	0.165	0.104
334516	Analytical Laboratory Instrument Manufacturing	3	0	3	0	207	0.076



Table E-3. NAICS Code Rankings by TWPE from *TRILTOutput2013*

NAICS Code	NAICS Code Description	Number of Facilities Reporting Water Releases	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
327123	Other Structural Clay Product Manufacturing	2	1	1	0	6.38	0.0704
333319	Other Commercial and Service Industry Machinery Manufacturing	4	0	4	0	4,330	0.0603
315999	Other Apparel Accessories and Other Apparel Manufacturing	1	0	1	0	502	0.0536
493110	General Warehousing and Storage	1	0	1	0	0.023	0.0515
333220	Plastics and Rubber Industry Machinery Manufacturing	1	1	0	0	5	0.05
323115	Digital Printing	1	0	1	0	410	0.0437
311941	Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing	1	0	1	0	53	0.0396
922160	Fire Protection	1	0	1	0	28.7	0.0318
339944	Carbon Paper and Inked Ribbon Manufacturing	1	1	0	0	5	0.0281
334112	Computer Storage Device Manufacturing	3	0	3	0	172	0.0255
327332	Concrete Pipe Manufacturing	1	1	0	0	0.01	0.0224
112120	Dairy Cattle and Milk Production	1	0	1	0	25	0.0187
325413	In-Vitro Diagnostic Substance Manufacturing	3	0	3	0	43.9	0.0109
333997	Scale and Balance Manufacturing	1	0	1	0	0.0046	0.0103
327113	Porcelain Electrical Supply Manufacturing	1	0	1	0	0.21	0.0084
333612	Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	1	0	1	0	300	0.00438
332211	Cutlery and Flatware (except Precious) Manufacturing	1	0	1	0	0.06	0.0042
322221	Coated and Laminated Packaging Paper Manufacturing	2	0	2	0	0.65	0.00356
312112	Bottled Water Manufacturing	2	0	2	0	1,110	0.00338
322212	Folding Paperboard Box Manufacturing	1	0	1	0	20	0.00213
321213	Engineered Wood Member (except Truss) Manufacturing	1	1	0	0	5	0.00185
337122	Nonupholstered Wood Household Furniture Manufacturing	1	0	1	0	1.22	0.00135
336612	Boat Building	1	0	1	0	0.106	0.00006
516110	Internet publishing and broadcasting	1	0	1	0	0.4	0.0000427
924120	Administration of Conservation Programs	2	2	0	0	16,000	0

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
4911	ELECTRICAL SERVICES	346	177	7,510,000,000	3,330,000
4941	WATER SUPPLY	12	693	2,350,000,000	887,000
2874	PHOSPHATIC FERTILIZERS	11	1	106,000,000	514,000
2812	ALKALIES AND CHLORINE	8	5	371,000,000	291,000
2911	PETROLEUM REFINING	75	11	386,000,000	217,000
2869	INDUST. ORGANIC CHEMICALS NEC	81	120	3,760,000,000	215,000
3312	BLAST FURN/STEEL WORKS/ROLLING	41	20	138,000,000	186,000
3339	PRMRY SMELT/NONFERROUS METALS	7	1	33,400,000	171,000
1311	CRUDE PETROLEUM & NATURAL GAS	4	51	2,000,000,000	161,000
2819	INDUSTRIAL INORGANIC CHEMICALS	28	46	379,000,000	159,000
2491	WOOD PRESERVING	0	16	1,230,000	126,000
2611	PULP MILLS	50	3	576,000,000	114,000
5032	BRICK, STONE & RELAT MATERIALS	0	2	1,580,000,000	99,400
2085	DIST, RECTIFIED & BLENDED LIQ	4	6	51,800,000	98,600
4953	REFUSE SYSTEMS	14	100	2,210,000,000	84,100
2821	PLSTC MAT./SYN RESINS/NV ELAST	60	18	59,600,000	77,900
7033	REC VEHICLE PARKS & CAMPSITES	0	112	51,100,000	77,000
2621	PAPER MILLS	76	6	552,000,000	75,600
2631	PAPERBOARD MILLS	18	9	118,000,000	60,600
2679	CONV PAPER & PAPERBRD PRODUCTS	2	0	728,000	58,900
7948	RACING, INCLUDING TRACK OPERA	0	1	28,900,000	55,800
2281	YARN SPIN MILLS:COTTON, MM FIB	1	4	203,000	48,600
4513	AIR COURIER SERVICES	0	1	192,000,000	48,000
1221	BITUMINOUS COAL & LIG, SURFACE	8	101	193,000,000	36,800
4612	CRUDE PETROLEUM PIPELINES	3	2	3,050,000,000	28,600
4581	AIRPORTS, FLYING FIELDS & SER	2	27	129,000,000	28,000
2062	CANE SUGAR REFINING	3	1	2,270,000	27,400
2261	FINISH OF BRD WOV FAB OF COTTN	4	3	20,300,000	26,700
9223	CORRECTIONAL INSTITUTIONS	8	42	2,650,000	24,100
3612	TRANSFORMERS	3	1	19,900	23,400
2047	DOG AND CAT FOOD	1	8	4,470,000	19,200
1011	IRON ORES	4	1	37,100,000	18,300

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
2899	CHEMICALS & CHEM PREP, NEC	8	16	878,000,000	15,900
1479	CHEM & FERT MINERA MINING, NEC	1	6	23,800,000	15,400
3861	PHOTOGRAPHIC EQUIP & SUPPLIES	1	2	32,100,000	14,300
1021	COPPER ORES	4	2	317,000,000	14,200
1061	FERROALLOY ORES, EXCL VANADIUM	4	1	86,100,000	11,300
2816	INORGANIC PIGMENTS	5	2	1,180,000,000	11,100
1474	POTASH, SODA & BORATE MINERALS	0	1	1,760,000,000	10,900
3334	PRIMARY PRODUCTION OF ALUMINUM	9	2	40,000,000	10,700
9711	NATIONAL SECURITY	22	24	20,700,000	10,500
3081	UNSUPPORTED PLSTICS FILM/SHEET	3	9	79,900,000	8,860
1094	URANIUM-RADIUM-VANADIUM ORES	1	3	50,500,000	8,550
3624	CARBON AND GRAPHITE PRODUCTS	4	5	4,360,000	8,000
6515	OPER OF RES MOBILE HOME SITES	0	296	6,540,000	7,980
2258	WARP KNIT FABRIC MILLS	2	1	933,000	7,780
3731	SHIP BUILDING AND REPAIRING	5	12	473,000	5,870
8299	SCHOOLS & EDUCATIONAL SERVICES	2	8	164,000	5,650
9999	NONCLASSIFIABLE ESTABLISHMENTS	1	75	18,700,000	5,400
2075	SOYBEAN OIL MILLS	0	12	2,090,000	5,210
2063	BEET SUGAR	11	2	34,900,000	5,100
3471	PLATING AND POLISHING	16	14	1,520,000	4,620
2865	CYCLIC CRUDES INTERM., DYES	12	5	3,420,000	4,570
6512	OPER OF NONRESIDENTIAL BLDGS	1	23	39,800,000	4,480
3714	MOTOR VEHICLE PARTS & ACCESSOR	9	11	2,350,000	4,460
2011	MEAT PACKING PLANTS	13	15	118,000,000	4,110
2833	MEDICINAL CHEM/BOTANICAL PRODU	5	11	6,030,000	4,070
3724	AIRCRAFT ENGINES & ENGINE PART	1	1	994,000	3,960
2822	SYN RUBBER (VULCAN ELASTOMERS)	10	3	3,540,000	3,720
5172	PETROL & PET PROD WHOLESALERS	1	5	198,000	3,620
2015	POULTRY SLAUGHTERING & PROCESS	15	24	50,300,000	3,470
1041	GOLD ORES	7	9	14,500,000	3,430
1222	BITUMINOUS COAL & LIG, UNDERGR	1	25	85,500,000	3,390
2879	PESTICIDES & AGRICULTURAL CHEM	5	3	1,090,000	3,370

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
2211	BROAD WOVEN FABRIC MILLS, COTT	2	3	215,000	3,270
2514	METAL HOUSEHOLD FURNITURE	1	1	324,000	3,100
1475	PHOSPHATE ROCK	4	0	2,890,000	3,080
2046	WET CORN MILLING	3	9	10,600,000	3,070
6513	OPERATORS OF APART BUILDINGS	0	39	149,000	3,020
1455	KAOLIN AND BALL CLAY	0	4	28,200,000	2,960
3241	CEMENT, HYDRAULIC	4	27	83,000,000	2,950
3341	2NDARY SMELT/NONFERROUS METALS	3	9	1,220,000	2,910
8211	ELEMENTARY & SECONDARY SCHOOLS	0	298	12,700,000	2,490
3272	CONCRETE PROD EXC BLCK & BRICK	0	16	607,000	2,380
3351	ROLL/DRAW/EXTRUDING OF COPPER	5	4	4,060,000	2,320
1459	CLAY, CERAMIC & REFRAC MAT NEC	0	7	501,000	2,270
2834	PHARMACEUTICAL PREPARATIONS	10	13	38,900,000	2,260
3365	ALUMINUM FOUNDRIES	1	1	482,000	2,230
2789	BOOKBINDING & RELATED WORK	1	0	331,000	2,060
5169	CHEMICALS AND ALLIED PRODUCTS	1	18	26,700,000	2,020
9611	ADMIN OF GENERAL ECONOMIC PRO	1	0	873,000	2,000
3625	RELAYS AND INDUSTRIAL CONTROLS	0	3	761	1,920
2499	WOOD PRODUCTS, NEC	1	1	8,080,000	1,820
2273	CARPETS AND RUGS, NEC	2	2	1,400,000	1,750
5171	PETROLEUM BULK STATIONS & TERM	4	132	10,100,000	1,670
3321	GRAY IRON FOUNDRIES	2	10	525,000	1,630
4922	NATURAL GAS TRANSMISSION	0	15	303,000	1,630
6552	LAND SUBDIVIDERS & DEV, EX CEM	1	53	2,940,000	1,600
2091	CANNED & CURED FISH & SEAFOOD	3	2	58,600,000	1,500
921	FISH HATCHERIES AND PRESERVES	19	185	41,900,000	1,480
8422	BOTANICAL & ZOOLOGICAL GARDENS	0	6	5,010,000	1,450
3482	SMALL ARMS AMMUNITION	1	0	121,000	1,450
2873	NITROGEN FERTILIZERS	11	10	13,700,000	1,400
1031	LEAD AND ZINC ORES	10	2	12,600,000	1,390
4173	BUS TERMINAL & SERVICE FACILIT	0	1	1,780,000	1,330
3675	ELECTRONIC CAPACITORS	1	3	857	1,240

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
4491	MARINE CARGO HANDLING	1	16	1,030,000	1,200
4931	ELEC & OTHER SERVICES COMBINED	3	19	18,200,000	1,190
8221	COLLEGES, UNIV & PROF SCHOOLS	1	26	6,870,000	1,180
1389	OIL AND & FIELD SERVICES, NEC	0	11	101,000,000	1,180
2099	FOOD PREPARATIONS, NEC	3	0	2,210,000	1,130
3316	COLD ROLLED STEEL SHEET/STRIP	6	4	3,610,000	1,100
3315	STEEL WIRE DRAW & STEEL NAILS	3	2	3,030,000	1,050
8999	SERVICES, NEC	0	123	262,000	1,050
2048	PREP FEEDS & INGRED FOR ANIMA	1	7	333,000	1,000
3291	ABRASIVE PRODUCTS	0	4	596,000	994
3297	NONCLAY REFRACTORIES	1	3	98,200,000	892
1499	MISC NONMETAL MINERALS, NEC	0	19	59,900,000	867
7011	HOTELS AND MOTELS	0	56	210,000	865
3295	MINE & EARTHS, GROUND OR TREAT	0	8	24,400,000	810
1795	WRECKING AND DEMOLITION WORK	1	0	7,870,000	797
3533	OIL FIELD MACHINERY	0	7	22,900	768
9511	AIR & WATER RES & SOL WSTE MGT	3	32	3,420,000	611
4961	STEAM & AIR-CONDITIONING SUP	3	5	948,000	558
1422	CRUSHED AND BROKEN LIMESTONE	4	110	110,000,000	545
7538	GENERAL AUTO REPAIR SHOPS	0	6	142,000	525
1442	CONSTRUCTION SAND AND GRAVEL	1	50	156,000,000	515
1044	SILVER ORES	3	4	42,200	511
8731	COMMERCIAL PHYSICAL RESEARCH	3	9	60,600,000	509
3111	LEATHER TANNING AND FINISHING	0	2	486,000	506
1541	GEN CONTRACT-INDUST. BLDGS.	1	1	34,400	501
3353	ALUMINUM SHEET, PLATE AND FOIL	5	3	1,260,000	463
7996	AMUSEMENT PARKS	2	3	290,000	448
2823	CELLULOSIC MAN-MADE FIBERS	1	0	361,000	409
2077	ANIMAL AND MARINE FATS & OILS	2	5	5,790,000	404
3531	CONSTRUCTION MACHINERY	2	2	567,000	400
8744	FACILITIES SUPPORT SERVICES	0	3	30,500	396
2892	EXPLOSIVES	2	2	12,100,000	386

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
2262	FINISH OF BRD WOV FAB/MAN-MADE	7	0	1,780,000	386
2269	FINISHERS OF TEXTILES, NEC	3	2	2,900,000	378
2033	CANNED FRUITS, VEG, PRES, JAM	1	16	4,070,000	334
2032	CANNED SPECIALTIES	0	3	103,000	324
2253	KNIT OUTERWEAR MILLS	1	0	54,000	317
2022	CHEESE, NATURAL AND PROCESSED	1	15	12,500,000	306
3061	MECHANICAL RUBBER GOODS	0	6	237,000	299
2257	CIRCULAR KNIT FABRIC MILLS	2	0	4,250,000	297
3463	NONFERROUS FORGINGS	2	0	2,050,000	296
3313	ELECTROMETALLURGICAL PRODUCTS	0	3	915,000	283
5093	SCRAP & WASTE MATERIALS	0	6	61,200	281
2035	PICKLED FRTS & VEG. SAUCES	1	6	17,700,000	279
9211	COURTS	0	2	448	272
3273	READY-MIXED CONCRETE	0	181	114,000,000	265
4225	GENERAL WAREHOUSING & STORAGE	1	11	112,000	265
4011	RAILROADS, LINE HAUL OPERATING	1	36	1,290,000	263
8412	MUSEUMS AND ART GALLERIES	0	6	22,900	258
7032	SPORTING & RECREATIONAL CAMPS	0	62	223,000	241
3317	STEEL PIPE AND TUBES	4	9	156,000	240
8063	PSYCHIATRIC HOSPITALS	0	6	11,700	239
2013	SAUSAGES & PREPARED MEAT PROD	0	12	31,300,000	238
3691	STORAGE BATTERIES	0	1	12,000	227
8661	RELIGIOUS ORGANIZATIONS	0	14	8,190	226
3089	PLASTICS PRODUCTS, NEC	2	10	582,000	217
2092	FRE OR FROZ PCK FISH, SEAFOOD	3	10	74,100,000	216
4925	MIXED,MANUFAC,OR LIQ GAS PROD	1	3	15,600,000	215
3651	RADIO AND TV RECEIVING SETS	0	1	423	212
2824	SYN ORG FIBERS,EXCEPT CELLULOS	5	1	1,000,000	207
3585	REFRIGERATION & HEATING EQUIP	1	5	672,000	188
3443	FAB PLATE WORK (BOILER SHOPS)	0	5	377,000	184
8059	NURSING AND PERSONAL CARE, NEC	0	10	12,000	179
3356	ROLL, DRAW & EXTRUD NONFERROUS	1	1	2,270	178

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
2813	INDUSTRIAL GASES	0	40	3,860,000	177
3479	METAL COATING & ALLIED SERVIC	2	13	294,000	175
2836	BIOLOGCAL PROD, EXCEPT DIAGNOS	0	2	4,820,000	175
2436	SOFTWOOD VENEER AND PLYWOOD	0	6	2,450,000	173
4226	SPECIAL WAREHOUSING & STORAGE	1	25	9,460,000	164
9229	PUBLIC ORDER AND SAFETY, NEC	0	2	1,270	160
2843	SURF ACTIVE AGENT, FIN AGENTS	1	1	1,350,000	148
3674	SEMICONDUCTORS & RELATED DEVIC	2	1	1,150,000	147
1629	HEAVY CONSTRUCTION, NEC	0	10	431,000	140
1321	NATURAL GAS LIQUIDS	0	19	1,900,000	129
3721	AIRCRAFT	1	4	47,700,000	128
5541	GASOLINE SERVICE STATIONS	0	47	64,500	128
3678	CONNECTORS FOR ELEC APPLICATIO	0	1	62.6	120
7999	AMUSEMENT AND RECREATION, NEC	0	32	18,600,000	114
3511	TURBINES & TURBINE GENERATOR	1	3	138,000	111
6514	OPER OF DWELL OTHER THAN APART	0	30	12,900,000	104
2023	CONDENSED AND EVAPORATED MILK	1	7	1,990,000	104
3965	FASTENERS, BUTTONS, NEEDLES	1	0	5,240	102
1623	H2O, SEW, PIPE & COM. & POWR	0	1	63,300	101
3592	CARBURETORS,PISTONS,RINGS,VALV	0	1	314	98.3
3462	IRON AND STEEL FORGINGS	0	5	86,100	97.7
3011	TIRES AND INNER TUBES	2	10	2,120,000	95.4
3262	VIT CHINA TABLE & KTCHN ARTICL	0	1	3,150	94.2
3751	MOTORCYCLES, BICYCLES AND PART	0	2	17,300	93.2
2842	SPECIALTY CLEANING, POLISHING	0	3	75,800	83.3
1622	BRIDGE, TUNNEL & ELEV HWY CONS	0	1	143,000	83.1
3715	TRUCK TRAILERS	0	3	881	78.4
3354	ALUMINUM EXTRUDED PRODUCTS	1	1	249,000	77.3
7699	REPAIR SHOPS & RELATED SERVICE	0	4	2,260	74.3
2891	ADHESIVES AND SEALANTS	1	1	234,000	74.2
3229	PRESSED & BLOWN GLASS & GWARE	1	8	5,480,000	72.6
5159	FARM-PRODUCT RAW MATERIALS	1	0	64,600	70.6

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
3824	FLUID METERS & COUNTING DEVICE	0	2	431	68.6
8249	VOCATIONAL SCHOOLS, NEC	1	4	1,700,000	67.8
3469	METAL STAMPINGS, NEC	1	3	12,600	67.8
9512	LAND, MIN, WILDLIFE/FOREST CON	1	28	289,000	63.3
3711	MOTOR VEHICLES & CAR BODIES	0	6	1,210,000	62.7
2861	GUM AND WOOD CHEMICALS	3	5	1,720,000	62.4
3299	NONMETALLIC MINERAL PROD, NEC	0	2	62,500	61.4
3699	ELEC MACHINERY,EQUIP & SUPPLIE	0	1	370	61.3
3441	FABRICATED STRUCTURAL METAL	0	4	21,000	61.1
4939	COMBINATION UTILITIES, NEC	1	10	78,900	56.9
3399	PRIMARY METAL PRODUCTS, NEC	1	3	34,300	54.6
8733	NONCOMMERCIAL RESEARCH ORGANI	1	5	816,000	53.6
273	ANIMAL AQUACULTURE	0	26	31,900,000	52.9
2951	PAVING MIXTURES AND BLOCKS	0	14	1,110,000	52.7
3498	FABRICATED PIPE AND FITTINGS	0	9	314,000	51.9
3357	DRAW/INSULAT OF NONFERROUS WIR	0	5	38,100	51.9
6531	REAL ESTATE AGENTS & MANAGERS	0	4	2,310	50.3
3519	INTERNAL COMBUSTION ENGINES,	1	0	5,640	49
3423	HAND AND EDGE TOOLS, NEC	0	3	16,900	48.4
8082	HOME HEALTH CARE SERVICES	0	2	485	48.2
9199	GENERAL GOVERNMENT, NEC	1	3	1,880,000	48
2079	SHORT, TABLE OILS, MARGERINE	0	4	169,000	47.2
3613	SWITCHGEAR & SWITCHBOARD APPAR	0	3	1,550	46.2
3589	SERVICE INDUSTRY MACHINERY	0	1	1,080,000	43.3
2999	PROD OF PETROLEUM & COAL, NEC	2	6	1,740,000	42.4
2754	COMMERCIAL PRINTING, GRAVURE	1	1	421,000	42.2
4212	LOCAL TRUCKING WITHOUT STORAGE	0	3	1,130	42
2952	ASPHALT FELT AND COATINGS	0	7	4,120,000	41
2026	FLUID MILK	0	6	2,860,000	39.1
4512	AIR TRANSPORTATION, SCHEDULED	0	1	91,000	39.1
5812	EATING PLACES	0	20	2,850	35.5
8641	CIVIC, SOCIAL & FRATERNAL ASS.	0	12	7,860	33.2



**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
8734	COMMERCIAL TESTING LABORATORY	1	2	4,950	33
3364	NONFERROUS DIE CAST, EXC. ALUM	0	1	645	32.2
4613	REFINED PETROLEUM PIPELINE	0	8	27,500	31.5
5421	MEAT AND FISH MARKETS	0	1	219	31.1
3491	INDUSTRIAL VALVES	0	2	173	30.5
2037	FROZEN FRTS, FRT JUICES & VEG	2	2	5,830,000	29
3663	RADIO & TV COMMUNICATION EQUIP	0	1	1,620	28.9
2421	SAWMILLS & PLANING MILLS, GEN	0	23	952,000	28
3499	FABRICATED METAL PRODUCTS NEC	0	4	17,600	27.1
3743	RAILROAD EQUIPMENT	1	1	217,000	26.9
2676	SANITARY PAPER PRODUCTS	2	2	3,560,000	26.6
3296	MINERAL WOOL	0	2	193,000	25.3
3764	SPACE PROPULSION UNITS & PARTS	3	1	5,910,000	25.1
7299	MISCELLANEOUS PERSONAL SERVICE	0	9	30,400	24.9
2082	MALT BEVERAGES	1	5	696,000	24.9
3841	SURGICAL & MEDICAL INSTRUMENTS	0	3	6,990	24.8
2021	CREAMERY BUTTER	0	3	8,270,000	24
3671	ELECTRON TUBES	1	1	157	23.8
7371	CUSTOM COMPUTER PROG SERVICES	0	2	247	23.5
8052	INTERMEDIATE CARE FACILITIES	0	5	4,360	23.2
4789	TRANSPORTATION SERVICES, NEC	0	5	2,630	23.1
3812	SEARCH & NAVIGATION EQUIPMENT	1	2	1,050,000	21.7
3231	GLASS PROD MADE OF PURCH. GLAS	0	3	5,650	20.3
3275	GYP SUM PRODUCTS	0	4	2,750,000	20.3
8062	GEN. MEDICAL/SURGICAL HOSPITAL	1	7	31,900	19.7
3448	PREFABRICATED METAL BUILDINGS	0	2	169	19.2
3639	HOUSEHOLD APPLIANCES, NEC	1	0	3,290	19.1
9111	EXECUTIVE OFFICES	1	1	1,220	19.1
8051	SKILLED NURSING CARE FACILITIE	0	43	147,000	19.1
181	ORNAMENTAL NURSERY PRODUCTS	0	2	158,000	18.3
2096	POTATO CHIPS & SIMILAR SNACKS	1	1	25,600,000	18
3523	FARM MACHINERY AND EQUIPMENT	1	6	226,000	17.4

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
182	FOOD CROPS GROWN UNDER COVER	0	4	90,000	17.1
7334	PHOTOCOPYING/DUPLICATING SERV	0	1	79.2	16.2
2221	BROAD WOVEN FABRIC MILLS, SYNT	3	5	288,000	16.1
4111	LOCAL AND SUBURBAN TRANSIT	0	7	7,750	16
7215	COIN-OPERATED LAUNDRIES/DRYCLE	0	4	927	15.6
7353	HEAVY CONSTRUCTON EQUIP RENTAL	0	1	43,400	15
4221	FARM PROD WAREHOUSING & STORAG	0	2	62,000	15
9621	REG & ADMIN OF TRANS PROGRAMS	0	20	16,400	14.9
3211	FLAT GLASS	0	8	104,000	14.9
2493	RECONSTITUTED WOOD PRODUCTS	1	6	29,500,000	14.8
7997	MEMBERSHIP SPORTS & REC CLUBS	0	12	209,000	14.6
2076	VEG. OIL MILLS, EXCEPT CORN	0	1	55	13.9
8361	RESIDENTIAL CARE	0	19	17,000	13.5
7389	BUSINESS SERVICES, NEC	0	5	203,000	13.5
5015	MOTOR VEHICLE PARTS, USED	0	1	12,400	12.9
6021	NATIONAL COMMERCIAL BANKS	0	2	2,780	12.8
2084	WINES, BRANDY & BRANDY SPIRIT	0	4	64,300	12
5052	COAL & OTHER MINERALS & ORES	0	4	81,200	11.4
2542	METAL PARTI,SHELF,LOCKERS	0	2	25.5	11
3086	PLASTICS FOAM PRODUCTS	0	4	601,000,000	10.8
4119	LOCAL PASSENGER TRANSPORTATION	0	1	599,000	10.4
3489	ORDNANCE AND ACCESSORIES, NEC	1	2	5,070	10.3
3429	HARDWARE, NEC	0	1	125	9.27
3442	METAL DOORS, SASH, AND TRIM	0	1	27.2	9.11
5075	AIR HEAT & AIR-COND. EQUIP/SUP	0	1	82.4	8.87
3492	FLUID POWER VALVES & HOSE FITT	0	4	28,200	8.75
3264	PORCELAIN ELECTRICAL SUPPLIES	0	2	861	8.48
4013	RAILROAD SWITCHING & TERM ESTAB	1	9	112,000	8.45
2024	ICE CREAM AND FROZEN DESSERTS	0	3	1,780,000	8.18
3546	POWER DRIVEN HAND TOOLS	0	2	1,820	8.01
5191	FARM SUPPLIES	0	7	44,900	7.89
8811	PRIVATE HOUSEHOLDS	0	10	23,800	7.58

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
3421	CUTLERY	0	2	1,610,000,000	7.08
8351	CHILD DAY CARE SERVICES	0	5	768	6.91
8099	HEALTH & ALLIED SERVICES, NEC	0	4	48,900	6.75
3087	CUSTOM COMPOUNDED PURCH. RESIN	0	5	33,400	6.69
711	SOIL PREPARATION SERVICES	0	1	3,320	6.55
279	ANIMAL SPECIALTIES, NEC	0	1	118,000	6.53
112	RICE	0	1	74.2	6.22
2299	TEXTILE GOODS, NEC	1	0	547,000	6.2
2875	FERTILIZERS, MIXING ONLY	0	3	9,830	6.18
1429	CRUSHED AND BROKEN STONE, NEC	0	19	1,160,000	6.12
5311	DEPARTMENT STORES	0	1	160	5.85
6519	LESSORS OF REAL PROPERTY, NEC	0	1	722	5.59
291	FARMS, PRIMARILY LIVESTOCK	0	1	563	5.51
3562	BALL AND ROLLER BEARINGS	0	2	18,200	5.48
7992	PUBLIC GOLF COURSES	0	4	72.2	5.48
7021	ROOMING AND BOARDING HOUSES	0	3	401	5.11
4213	TRUCKING, EXCEPT LOCAL	0	2	15,200	5.11
3561	PUMPS AND PUMPING EQUIPMENT	0	3	9,340	4.96
7216	DRYCLEAN PLANTS, EXC RUG CLEAN	0	1	8.58	4.29
2411	LOGGING CAMPS/LOGGING CONTRACT	0	2	31,200	4.26
2752	COMMERCIAL PRINT, LITHOGRAPHIC	0	1	129,000	4.2
2086	BOT & CAN SOFT DRNK & CARB WA	0	5	23,700,000	4.16
3433	HEATING EQUIP, EXCEPT ELECTRIC	0	1	84,300	4.1
5082	CONST & MINING MACHINE & EQUIP	0	3	39,400	4.07
5199	NONDURABLE GOODS, NEC	0	1	114,000	3.7
174	CITRUS FRUITS	1	1	11,100	3.33
4952	SEWERAGE SYSTEMS	0	1	1,850	3.22
3545	MACHINE TOOL ACCESSORIES	1	0	69,400	3.15
3069	FABRICATED RUBBER PRODUCTS, NEC	0	8	71,000	3.14
3452	BOLTS, NUTS, RIVETS & WASHERS	0	1	6.04	3.02
3599	INDUSTRIAL MACHINERY, NEC	0	1	81.2	3.02
3728	AIRCRAFT PARTS AND EQUIP, NEC	0	5	4,540	2.98

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
2252	HOSIERY, NEC	1	0	20,400	2.93
1542	GEN CONTRACT, NON-RES BLDGS.	0	3	1,290	2.8
3497	METAL FOIL AND LEAF	0	1	251	2.7
2844	PERFUMES,COSMETICS,TOILET PREP	0	2	24,700	2.43
1381	DRILLING OIL AND GAS WELLS	0	1	39,300	2.32
1241	COAL MINING SERVICE	0	3	30,200	2.29
3451	SCREW MACHINE PRODUCTS	0	1	44.9	2.11
2992	LUBRICATING OILS AND GREASES	0	7	379,000	2.05
7041	ORG. HOTEL & LODG HSE, ON MEMB	0	1	8.68	1.89
8222	JUNIOR COLLEGES & TECH INSTITU	0	6	2,470	1.83
4924	NATURAL GAS DISTRIBUTION	0	1	3,380	1.79
3431	METAL SANITARY WARE	0	1	24.5	1.76
2282	YARN TEXT, THROW, TWIST & WIND	0	2	378	1.76
3799	TRANSPORTATION EQUIPMENT, NEC	0	1	29.5	1.75
3999	MANUFACTURING INDUSTRIES, NEC	0	4	2,950	1.72
3052	RUBBER & PLASTICS HOSE & BELT	0	2	21,000	1.67
2672	COATED & LAMINATED, NEC	1	1	3,130	1.6
252	CHICKEN EGGS	0	2	4,070,000	1.49
3053	GASKETS, PACKING & SEALING DEV	1	0	1,170,000	1.39
4222	REFRIGERTAED WAREHOUSING & STO	0	4	7,000	1.14
5143	DAIRY PROD, EXC DRIED & CANNED	0	1	13,500	1.12
3483	AMMUNIT., EXC. FOR SMALL ARMS	1	2	42,300	1.11
2671	COATED & LAMINATED PACKAGING	0	1	2.03	1.02
7542	CAR WASHES	0	18	9,750	0.901
3632	HOUSEHOLD REFRIG. & FREEZERS	1	1	688	0.812
5411	GROCERY STORES	0	7	165	0.779
3559	SPECIAL INDUSTRY MACHINERY,NEC	1	0	415	0.731
3552	TEXTILE MACHINERY	0	3	135	0.703
8071	MEDICAL LABORATORIES	0	1	11,500	0.672
3694	ELEC EQUIP FOR INT COMBUS ENGI	0	1	2.01	0.628
3292	ASBESTOS PRODUCTS	0	1	10,300	0.589
3496	MISC. FABRICATED WIRE PRODUCTS	0	1	101	0.583

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
3716	MOTOR HOMES	0	1	14.4	0.576
5144	POULTRY AND POULTRY PRODUCTS	0	1	153,000	0.563
2731	BOOKS: PUBLISHING & PRINTING	0	1	159	0.501
7991	PHYSICAL FITNESS FACILITIES	0	7	950	0.476
2851	PAINTS/VARNISH/LACQUERS/ENAMEL	0	3	1,470	0.437
3548	WELDING APPARATUS	0	2	1,910	0.428
1799	SPECIAL TRADE CONTRACTORS, NEC	0	4	839	0.423
3713	TRUCK & BUS BODIES	0	1	940	0.421
3544	SPECIAL DIES/TOOLS/JIGS & FIXT	0	1	0.826	0.413
3524	LAWN AND GARDEN EQUIPMENT	0	1	1.72	0.413
4215	COURIER SERVICES, EXCEPT AIR	0	2	4,740	0.41
4783	PACKING AND CRATING	0	1	26,800	0.362
5142	PACKAGED FROZEN FOODS	0	2	240,000	0.352
4499	WATER TRANSPORTATION SERIVCES	0	1	645	0.349
3679	ELECTRONIC COMPONENTS, NEC	0	4	158,000	0.345
913	SHELLFISH	0	2	48,400	0.281
4813	TELEPHONE COM, EXCEPT RADIO	0	3	36.7	0.276
8043	OFFICES & CLINICS OF PODIATRIS	0	1	724	0.268
4231	TRUCKING TERMINAL FACILITIES	0	7	14,400	0.246
2097	MANUFACTURED ICE	0	1	0.481	0.24
2297	NONWOVEN FABRICS	0	1	16,700	0.206
7694	ARMATURE REWINDING SHOPS	0	1	1,920	0.2
3534	ELEVATORS AND MOVING STAIRWAYS	0	1	439	0.199
3823	PROCESS CONTROL INSTRUMENTS	0	1	0.561	0.194
5149	GROCERIES & RELATED PRODUCTS	0	2	82,500	0.192
723	CROP PREP SERVICES FOR MARKET	0	1	168	0.186
2451	MOBILE HOMES	0	6	3,530	0.18
2141	TOBACCO STEMMING AND REDRYING	1	0	996	0.167
8331	JOB TRAINING & VOC REHAB SERVI	0	1	673	0.156
3083	LAMINATED PLASTICS PLATE/SHEET	0	1	3,380	0.148
9531	ADMIN OF HOUSING PROGRAMS	0	1	47.7	0.129
3594	FLUID POWER PUMPS AND MOTORS	0	1	0.245	0.123

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
3629	ELECTRICAL INDUSTRIAL APPARATS	0	1	216	0.12
4492	TOWING AND TUGBOAT SERVICE	0	1	1,500	0.118
3621	MOTORS AND GENERATORS	0	1	0.213	0.104
2895	CARBON BLACK	0	2	4,330	0.0998
8069	SPECIALTY HOSPITALS	0	3	2,010	0.0925
5146	FISH AND SEAFOODS	0	3	23,000	0.085
3494	VALVES AND PIPE FITTINGS, NEC	0	2	2,180	0.0716
6798	REAL ESTATE INVESTMENT TRUSTS	0	1	0.601	0.0604
5012	AUTOMOBILES AND OTHER VEHICLES	0	1	228	0.0549
1522	GEN CONTRACT-RES, NOT SINFA	0	1	0.976	0.0544
3281	CUT STONE & STONE PRODUCTS	0	5	93,200	0.054
2431	MILLWORK	0	1	123	0.046
5999	MISCELLANEOUS RETAIL STORES	0	3	792,000	0.0395
7993	COIN OPERATED AMUSEMENT DEVI	0	1	524	0.039
5271	MOBILE HOME DEALERS	0	1	25.3	0.0321
3586	MEASURING & DISPENSING PUMPS	0	1	12.3	0.0305
3412	METAL BARRELS, DRUMS AND PAILS	0	2	803	0.0305
3084	PLASTIC PIPE	0	1	2,460	0.0282
3593	FLUID POWER CYLINDERS & ACTUAT	0	1	109	0.0201
7933	BOWLING CENTERS	0	1	118	0.0183
4493	MARINAS	0	2	481	0.016
6732	EDUCAT.,RELIG & CHARITY TRUSTS	0	1	639	0.0136
3996	HARD SURFACE FLOOR COVERINGS	0	1	602,000	0.0115
5153	GRAIN AND FIELD BEANS	0	2	658	0.0111
2893	PRINTING INK	0	1	13,900	0.0103
4932	GAS & OTHER SERVICES COMBINED	0	1	9.64	0.00776
2044	RICE MILLING	0	1	6.29	0.00698
8322	INDIVIDUAL AND FAMILY SERVICES	0	1	276	0.00639
3251	BRICK AND STRUCTURAL CLAY TILE	0	3	7,250	0.00618
5099	DURABLE GOODS, NEC	0	1	477	0.00588
3532	MINING MACHINERY	0	1	24,100	0.00493
2841	SOAP/DETERG EXC SPECIAL CLEANR	0	2	130	0.00471

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
7911	DANCE STUDIOS, SCHOOLS & HALLS	0	1	215	0.00465
5989	FUEL DEALERS, NEC	0	1	2,920	0.00442
2591	DRAPE HARDWARE/WINDOW BLINDS	0	1	0.385	0.00385
4812	RADIOTELEPHONE COMMUNICATIONS	0	1	8.2	0.00161
5399	MISCELLANEOUS GENERAL STORES	0	1	35.3	0.00139
724	COTTON GINNING	0	1	294	0.00123
2041	FLOUR & OTHER GRAIN MILL PROD	0	2	3,310,000	0.000946
3648	LIGHTING EQUIPMENT, NEC	1	0	0.00208	0.000479
5461	RETAIL BAKERIES	0	1	32.6	0.000405
782	LAWN AND GARDEN SERVICES	0	1	1.65	0.000255
3542	MACHINE TOOLS, METAL FORMING	0	1	7.59	0.000174
2038	FROZEN SPECIALTIES, NEC	0	1	0.908	0.000124
3569	GENERAL INDUSTRIAL MACHINERY	0	1	0.0646	0.0000332
2732	BOOK PRINTING	0	1	6.99	0.0000281
5813	DRINKING PLACES (ALCOHOLIC BEV	0	2	6.84	0.0000216
2435	HARDWOOD VENEER AND PLYWOOD	0	2	19,500	0
2064	CANDY & OTHER CONFECTION PROD	0	1	842,000	0
971	HUNT & TRAP & GAME PROPOGATION	0	2	350,000	0
8399	SOCIAL SERVICES, NEC	0	1	69.6	0
2381	DRESS & WK GLOVE EXC KNIT/LEAT	0	1	21.2	0
912	FINFISH	0	1	17,500	0
5085	INDUSTRIAL SUPPLIES	0	2	346,000	0
4412	DEEP SEA FOREIGN TRANSP OF FRE	0	1	34,300	0
2061	CANE SUGAR, EXCEPT REFINE ONLY	1	3	2,750,000	0
3465	AUTOMOTIVE STAMPINGS	0	1	152,000	0
1099	METAL ORES, NEC	0	2	1,550	0
3325	STEEL FOUNDRIES, NEC	0	1	23,000	0
8631	LABOR UNIONS & LABOR ORGANIZA	0	1	175	0
254	POULTRY HATCHERIES	1	0	43,800	0
3274	LIME	0	2	9,970	0
212	BEEF CATTLE, EXCEPT FEEDLOTS	0	1	57.2	0
4741	RENTAL OF RAILROAD CARS	0	1	8,850	0

**Table E-4. SIC Code Rankings by TWPE from DMRLTOutput2013**

SIC Code	SIC Description	Major Dischargers	Minor Dischargers	Total Pounds Released	TWPE
2231	BROAD WOVEN FABRIC MILLS, WOOL	0	1	0.506	0
3411	METAL CANS	0	1	7,970	0
133	SUGARCANE AND SUGAR BEETS	0	1	23,000,000	0
3221	GLASS CONTAINERS	0	1	4,170	0
3851	OPHTHALMIC GOODS	0	1	1,390	0
1781	WATER WELL DRILLING	0	1	15	0
3661	TELEPHONE/TELEGRAPH APPARATUS	0	1	86.5	0
5983	FUEL OIL DEALERS	0	2	606	0
5942	BOOK STORES	0	1	2.52	0
5511	MOTOR VEH. DEALERS (NEW/USED)	0	1	348	0
5499	MISCELLANEOUS FOOD STORES	0	1	486	0
7218	INDUSTRIAL LAUNDERERS	0	1	94,100	0
7539	AUTOMOTIVE REPAIR SHOPS, NEC	0	3	1.6	0
1446	INDUSTRIAL SAND	0	5	285,000	0
3556	FOOD PRODUCTS MACHINERY	0	1	3,080	0
1423	CRUSHED AND BROKEN GRANITE	0	37	1,190,000	0
2051	BREAD & OTHER BAKERY PRODUCTS	0	1	2.96	0
1411	DIMENSION STONE	0	1	0.00275	0
3873	WATCHES, CLOCKS & WATCHCASES	0	1	84.8	0
3568	POWER TRANSMISSION EQUIPMENT	0	1	0.458	0
3566	SPEED CHANGERS, DRIVES & GEARS	0	1	4,370	0
3565	PACKAGING MACHINERY	0	1	1,750	0
3564	BLOWER AND FANS	0	1	34.4	0
3563	AIR AND GAS COMPRESSORS	0	2	26,600	0
3677	ELEC COILS, TRANSF. & INDUCTOR	0	1	41,400	0
4142	BUS CHARTER SERVICE, EXC LOCAL	0	1	49.6	0
1521	CONTRACTORS-SINGLE FAMILY HOUS	0	1	52,100	0
2678	STATIONERY, TABLETS & REL PROD	0	1	94.5	0



**Table E-5. Chemical Rankings by TWPE from TRILTOOUTPUT2013**

CAS Number	Chemical Name	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
N150	DIOXIN AND DIOXIN-LIKE COMPOUNDS	100	12	8	2.64	5,340,000
7783064	HYDROGEN SULFIDE	145	26	0	516,000	1,450,000
N078	CADMIUM AND CADMIUM COMPOUNDS	26	28	9	31,200	721,000
N450	MANGANESE AND MANGANESE COMPOUNDS	603	366	92	6,090,000	426,000
N590	POLYCYCLIC AROMATIC COMPOUNDS	147	24	12	3,770	210,000
N420	LEAD AND LEAD COMPOUNDS	1023	1154	307	89,900	201,000
N100	COPPER AND COPPER COMPOUNDS	595	802	306	309,000	195,000
N020	ARSENIC AND ARSENIC COMPOUNDS	118	17	10	39,700	160,000
75150	CARBON DISULFIDE	11	9	0	56,700	159,000
N458	MERCURY AND MERCURY COMPOUNDS	373	75	20	1,320	154,000
N511	NITRATE COMPOUNDS	537	872	68	195,000,000	146,000
118741	HEXACHLOROBENZENE	9	2	2	51.4	100,000
N725	SELENIUM AND SELENIUM COMPOUNDS	42	5	4	43,100	48,200
N982	ZINC AND ZINC COMPOUNDS	598	527	266	945,000	37,800
N740	SILVER AND SILVER COMPOUNDS	13	35	3	1,900	31,300
1336363	POLYCHLORINATED BIPHENYLS	7	4	0	0.502	17,100
N770	VANADIUM AND VANADIUM COMPOUNDS	150	12	5	569,000	17,100
N495	NICKEL AND NICKEL COMPOUNDS	497	728	175	157,000	15,700
107131	ACRYLONITRILE	12	19	1	4,600	10,400
123319	HYDROQUINONE	3	4	0	8,150	10,400
7664417	AMMONIA	621	350	74	8,700,000	9,660
N090	CHROMIUM AND CHROMIUM COMPOUNDS	441	641	166	133,000	9,300
N096	COBALT AND COBALT COMPOUNDS	106	80	32	76,400	8,400
8001589	CREOSOTE	18	4	8	4,830	6,520
N760	THALLIUM AND THALLIUM COMPOUNDS	11	0	0	4,010	4,090
63252	CARBARYL	3	0	0	14	3,920
55630	NITROGLYCERIN	1	4	0	85,300	3,410
107186	ALLYL ALCOHOL	4	6	0	41,400	3,310
333415	DIAZINON	1	0	0	5	3,110
74908	HYDROGEN CYANIDE	9	2	0	2,730	2,920

**Table E-5. Chemical Rankings by TWPE from TRILTOOUTPUT2013**

CAS Number	Chemical Name	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
107211	ETHYLENE GLYCOL	61	189	8	1,990,000	2,660
7632000	SODIUM NITRITE	30	81	1	800,000	2,560
108952	PHENOL	138	59	19	111,000	2,210
N040	BARIUM AND BARIUM COMPOUNDS	309	50	24	1,060,000	2,100
128030	POTASSIUM DIMETHYLDITHIOCARBAMATE	0	1	0	2,080	1,930
96184	1,2,3-TRICHLOROPROPANE	1	0	0	303	1,590
106898	EPICHLOROHYDRIN	3	12	0	187,000	1,300
100447	BENZYL CHLORIDE	3	3	0	1,520	1,200
79061	ACRYLAMIDE	6	12	0	1,950	992
75070	ACETALDEHYDE	119	30	4	431,000	951
50000	FORMALDEHYDE	123	79	7	286,000	667
25321146	DINITROTOLUENE (MIXED ISOMERS)	0	1	0	15,100	604
106990	1,3-BUTADIENE	9	2	0	123	595
91225	QUINOLINE	1	1	0	43.1	574
76062	CHLOROPICRIN	0	2	0	195	573
75218	ETHYLENE OXIDE	3	12	1	9,790	490
117817	DI(2-ETHYLHEXYL) PHTHALATE	4	17	7	1,860	466
140885	ETHYL ACRYLATE	3	13	2	8,680	434
1897456	CHLOROTHALONIL	2	1	0	58	428
57749	CHLORDANE	0	1	0	0.2	399
120127	ANTHRACENE	11	2	0	151	383
123728	BUTYRALDEHYDE	4	4	0	87,800	367
7697372	NITRIC ACID	13	229	4	425,000	317
1912249	ATRAZINE	2	2	1	291	303
121755	MALATHION	1	0	0	5	280
107028	ACROLEIN	2	2	0	274	268
128041	SODIUM DIMETHYLDITHIOCARBAMATE	0	7	0	3,310	265
111422	DIETHANOLAMINE	16	36	2	144,000	252
64186	FORMIC ACID	69	13	0	586,000	217
87865	PENTACHLOROPHENOL	10	2	3	391	215

**Table E-5. Chemical Rankings by TWPE from TRILTOOUTPUT2013**

CAS Number	Chemical Name	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
56235	CARBON TETRACHLORIDE	10	0	0	608	207
N010	ANTIMONY AND ANTIMONY COMPOUNDS	62	72	36	20,600	206
N050	BERYLLIUM AND BERYLLIUM COMPOUNDS	13	1	0	174	183
110827	CYCLOHEXANE	54	14	2	20,200	182
71432	BENZENE	141	51	7	5,440	163
75569	PROPYLENE OXIDE	1	13	2	7,920	158
N106	CYANIDE COMPOUNDS	39	67	9	27,300	148
62533	ANILINE	10	9	0	21,100	145
91203	NAPHTHALENE	133	54	4	14,300	143
108883	TOLUENE	199	155	13	23,800	134
99650	M-DINITROBENZENE	1	0	0	883	124
127184	TETRACHLOROETHYLENE	18	11	2	478	110
67561	METHANOL	195	264	17	7,050,000	103
1330207	XYLENE (MIXED ISOMERS)	152	109	14	22,900	99.2
123911	1,4-DIOXANE	12	10	0	158,000	97.7
107062	1,2-DICHLOROETHANE	16	4	0	9,510	95.1
110543	N-HEXANE	93	68	3	3,080	92.5
1319773	CRESOL (MIXED ISOMERS)	46	7	2	18,400	89.9
108054	VINYL ACETATE	9	24	2	20,500	82.2
80159	CUMENE HYDROPEROXIDE	1	4	0	12,200	80.4
95534	O-TOLUIDINE	2	1	0	312	78.1
120809	CATECHOL	86	6	0	7,750	77.5
542756	1,3-DICHLOROPROPYLENE	2	1	0	133	74.5
25376458	DIAMINOTOLUENE (MIXED ISOMERS)	3	2	0	216	71.3
105679	2,4-DIMETHYLPHENOL	8	1	1	7,530	70.9
95636	1,2,4-TRIMETHYLBENZENE	106	44	5	3,340	66.8
85018	PHENANTHRENE	16	2	1	202	58.7
106445	P-CRESOL	3	2	0	8,250	58.6
88857	DINITROBUTYL PHENOL	1	0	0	18	58
108452	1,3-PHENYLENEDIAMINE	0	3	0	133,000	50.6

Table E-5. Chemical Rankings by TWPE from *TRILTOutput2013*

CAS Number	Chemical Name	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
N230	CERTAIN GLYCOL ETHERS	36	252	3	435,000	46.4
92524	BIPHENYL	12	6	0	1,270	38.2
1918021	PICLORAM	1	0	0	18	37.3
107197	PROPARGYL ALCOHOL	0	2	0	1,180	35.5
100425	STYRENE	38	54	3	3,390	33.9
108930	CYCLOHEXANOL	3	3	1	406,000	32.3
106478	P-CHLOROANILINE	1	1	0	1,600	32.1
137268	THIRAM	2	6	6	56.3	31.5
79107	ACRYLIC ACID	7	26	0	184,000	28
1313275	MOLYBDENUM TRIOXIDE	23	8	8	30,200	24.2
120832	2,4-DICHLOROPHENOL	1	0	0	260	23.4
100414	ETHYLBENZENE	134	79	8	16,500	23.2
78875	1,2-DICHLOROPROPANE	5	0	0	774	23.2
75354	VINYLDENE CHLORIDE	4	1	1	49.2	23.1
68122	N,N-DIMETHYLFORMAMIDE	8	22	0	2,680,000	21.3
141322	BUTYL ACRYLATE	4	23	2	2,100	21
84742	DIBUTYL PHTHALATE	1	4	0	1,980	19.8
N084	CHLOROPHENOLS	1	0	0	390	19.5
75014	VINYL CHLORIDE	10	1	0	72.3	15.9
124403	DIMETHYLAMINE	6	4	0	24,700	15.4
75650	TERT-BUTYL ALCOHOL	7	17	1	459,000	14.5
35691657	1-BROMO-1-(BROMOMETHYL)-1,3-PROPANEDICARBONITRILE	0	1	0	437	13.1
132649	DIBENZOFURAN	1	1	0	26.4	12.9
4170303	CROTONALDEHYDE	1	0	0	1,150	11.5
608935	PENTACHLOROBENZENE	6	0	0	2.85	10.7
59669260	THIODICARB	1	0	0	5	10.4
80057	4,4'-ISOPROPYLDENEDIPHENOL	6	18	0	4,310	10.2
126998	CHLOROPRENE	1	0	0	84	9.24
60515	DIMETHOATE	1	0	0	5	9.2

**Table E-5. Chemical Rankings by TWPE from TRILTOutput2013**

CAS Number	Chemical Name	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
122394	DIPHENYLAMINE	3	5	0	459	9.18
75092	DICHLOROMETHANE	12	36	0	8,840	8.95
76131	FREON 113	1	0	0	1,530	8.93
75058	ACETONITRILE	10	17	0	41,600	8.86
7726956	BROMINE	2	0	0	852	8.52
121448	TRIETHYLAMINE	9	9	0	50,100	7.38
55406536	3-iodo-2-propynyl butylcarbamate	0	6	0	8,970	7.14
71556	1,1,1-TRICHLOROETHANE	3	0	0	1,370	6.44
71363	N-BUTYL ALCOHOL	22	53	1	61,700	6.31
302012	HYDRAZINE	0	3	1	101	6.08
90982324	CHLORIMURON ETHYL	0	1	0	302	6.05
122349	SIMAZINE	2	1	0	17.9	5.36
330541	DIURON	1	2	0	12	5.28
569642	C.I. BASIC GREEN 4	0	1	0	2.75	5.03
90437	2-PHENYLPHENOL	1	2	0	224	4.48
101779	4,4'-METHYLENEDIANILINE	1	3	0	2,140	3.93
67663	CHLOROFORM	18	14	0	1,780	3.7
123386	PROPIONALDEHYDE	6	3	0	8,530	3.67
74873	CHLOROMETHANE	20	5	0	640	3.43
533744	DAZOMET	2	0	0	307	2.91
95476	O-XYLENE	3	5	0	634	2.76
N171	ETHYLENEBISDITHIOCARBAMIC ACID, SALTS AND ESTERS	0	1	0	306	2.68
95501	1,2-DICHLOROBENZENE	1	2	0	253	2.53
98828	CUMENE	27	12	0	739	2.5
79016	TRICHLOROETHYLENE	4	9	4	222	2.22
74839	BROMOMETHANE	2	0	0	44	2.2
110861	PYRIDINE	3	6	0	654	1.98
108394	M-CRESOL	4	3	0	563	1.71
79005	1,1,2-TRICHLOROETHANE	5	0	0	56.1	1.68

**Table E-5. Chemical Rankings by TWPE from TRILTOOUTPUT2013**

CAS Number	Chemical Name	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
15972608	ALACHLOR	1	0	0	1	1.51
111444	BIS(2-CHLOROETHYL) ETHER	2	0	0	1.15	1.22
110009	FURAN	0	1	0	1,220	1.12
75274	DICHLOROBROMOMETHANE	1	0	0	37	1.11
78842	ISOBUTYRALDEHYDE	3	1	0	478	1.02
51285	2,4-DINITROPHENOL	1	0	0	124	1.01
109864	2-METHOXYETHANOL	2	3	0	3,540	1
77736	DICYCLOPENTADIENE	3	3	0	193	0.901
1163195	DECABROMODIPHENYL OXIDE	0	12	7	103	0.889
121142	2,4-DINITROTOLUENE	1	0	0	2	0.88
40487421	PENDIMETHALIN	1	1	1	5.15	0.876
108101	METHYL ISOBUTYL KETONE	17	25	0	5,180	0.793
98862	ACETOPHENONE	4	14	3	2,340	0.783
115071	PROPYLENE	8	0	0	1,100	0.771
120718	P-CRESIDINE	1	0	0	283	0.633
87683	HEXACHLORO-1,3-BUTADIENE	1	0	0	1	0.63
98953	NITROBENZENE	1	2	0	60.6	0.606
100254	P-DINITROBENZENE	1	0	0	5	0.6
96457	ETHYLENE THIOUREA	1	1	0	3.75	0.563
77474	HEXACHLOROCYCLOPENTADIENE	0	0	1	0.514	0.55
96333	METHYL ACRYLATE	6	6	1	51.9	0.519
75003	CHLOROETHANE	6	2	0	141	0.448
1634044	METHYL TERT-BUTYL ETHER	7	7	0	5,220	0.441
7664393	HYDROGEN FLUORIDE	6	30	1	76,600	0.429
95487	O-CRESOL	4	1	0	131	0.393
131113	DIMETHYL PHTHALATE	1	3	0	113	0.374
106467	1,4-DICHLOROBENZENE	1	0	0	5	0.35
100027	4-NITROPHENOL	1	0	0	62	0.303
42874033	OXYFLUORFEN	0	0	1	0.337	0.296
80626	METHYL METHACRYLATE	9	31	2	961	0.288

**Table E-5. Chemical Rankings by TWPE from TRILTOutput2013**

CAS Number	Chemical Name	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
108907	CHLOROBENZENE	7	6	0	83.1	0.244
108383	M-XYLENE	3	3	0	152	0.24
7287196	PROMETRYN	0	1	0	2.8	0.224
834128	AMETRYN	0	0	1	7.3	0.219
21087649	METRIBUZIN	1	1	0	151	0.211
74851	ETHYLENE	4	0	0	567	0.207
106503	P-PHENYLENEDIAMINE	1	2	0	1,280	0.198
106423	P-XYLENE	1	2	0	40.9	0.196
64902723	CHLORSULFURON	0	1	0	1,560	0.182
94757	2,4-D	2	2	1	18.9	0.147
78922	SEC-BUTYL ALCOHOL	5	8	0	8,380	0.111
75252	BROMOFORM	1	0	0	24	0.11
88755	2-NITROPHENOL	1	0	0	53	0.086
91087	TOLUENE-2,6-DIISOCYANATE	1	0	0	250	0.0854
961115	TETRACHLORVINPHOS	0	1	0	0.6	0.084
75718	DICHLORODIFLUOROMETHANE	2	1	0	137	0.0812
110805	2-ETHOXYETHANOL	2	1	0	8,870	0.0733
101200480	TRIBENURON METHYL	0	1	0	615	0.0478
75343	ETHYLIDENE DICHLORIDE	2	0	0	82	0.0421
85449	PHTHALIC ANHYDRIDE	1	6	1	311	0.0398
79210	PERACETIC ACID	1	21	0	22,400	0.0397
88891	PICRIC ACID	0	1	0	3.12	0.0312
100016	P-NITROANILINE	0	1	0	55	0.0303
108316	MALEIC ANHYDRIDE	2	0	0	60.1	0.0301
75525	NITROMETHANE	2	0	0	309	0.0266
1563662	CARBOFURAN	0	1	0	0.4	0.024
51036	PIPERONYL BUTOXIDE	0	1	0	0.15	0.0225
75694	TRICHLOROFLUOROMETHANE	1	1	0	19.2	0.0211
79118	CHLOROACETIC ACID	0	1	0	20	0.0161
540590	1,2-DICHLOROETHYLENE	2	0	0	11	0.016

**Table E-5. Chemical Rankings by TWPE from TRILTOutput2013**

CAS Number	Chemical Name	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
107051	ALLYL CHLORIDE	2	2	0	2.96	0.00992
584849	TOLUENE-2,4-DIISOCYANATE	1	0	0	26	0.00885
81072	SACCHARIN (MANUFACTURING, NO SUPPLIER NOTIFICATION)	0	1	0	400	0.00667
90040	O-ANISIDINE	0	1	0	4.97	0.00481
64675	DIETHYL SULFATE	0	3	0	62.1	0.00424
101804	4,4'-DIAMINODIPHENYL ETHER	0	1	0	1.2	0.00336
51235042	HEXAZINONE	1	0	0	5	0.00282
120821	1,2,4-TRICHLOROBENZENE	0	1	0	0.07	0.0014
79469	2-NITROPROPANE	1	0	0	5	0.00133
60355	ACETAMIDE	1	0	0	250	0.00105
74884	METHYL IODIDE	1	1	0	5.25	0.000636
136458	DIPROPYL ISOCINCHOMERONATE	0	1	0	0.06	0.000505
87627	2,6-XYLIDINE	0	1	0	0.053	0.000236
51796	URETHANE	0	2	0	0.33	0.00000237
7782414	FLUORINE	4	0	0	29,600	0
95545	1,2-PHENYLENEDIAMINE	0	1	0	138	0
N503	NICOTINE AND SALTS	1	15	1	73,800	0
N120	DIISOCYANATES	2	8	0	822	0
2837890	2-CHLORO-1,1,1,2-TETRAFLUOROETHANE	0	1	0	0.05	0
75887	2-CHLORO-1,1,1-TRIFLUOROETHANE	1	0	0	44	0
422560	3,3-DICHLORO-1,1,1,2,2-PENTAFLUOROPROPANE	0	1	0	202	0
137417	POTASSIUM N-METHYLDITHIOCARBAMATE	0	1	0	3,630	0
612839	3,3'-DICHLOROBENZIDINE DIHYDROCHLORIDE	0	3	0	35.2	0
29082744	OCTACHLOROSTYRENE	1	0	0	0.352	0
463581	CARBONYL SULFIDE	1	0	0	1,030	0
764410	1,4-DICHLORO-2-BUTENE	1	0	0	21	0
123637	PARALDEHYDE	1	0	0	1	0
53404378	2,4-D 2-ETHYL-4-METHYLPENTYL ESTER	0	1	0	0.05	0
149304	2-MERCAPTOBENZOTHAZOLE	3	2	0	5,670	0



**Table E-5. Chemical Rankings by TWPE from TRILTOOutput2013**

CAS Number	Chemical Name	Direct Dischargers	Indirect Dischargers	Both Direct and Indirect Dischargers	Total Pounds Released	TWPE (lb-eq/yr)
541413	ETHYL CHLOROFORMATE	0	1	0	0.95	0
75456	CHLORODIFLUOROMETHANE	0	1	0	2	0
75683	1-CHLORO-1,1-DIFLUOROETHANE	2	1	0	903	0
79947	TETRABROMOBISPHENOL A	1	2	0	18	0
872504	N-METHYL-2-PYRROLIDONE	8	67	2	169,000	0
924425	N-METHYLOLACRYLAMIDE	2	5	0	54.5	0
1717006	1,1-DICHLORO-1-FLUOROETHANE	1	0	0	180	0
2164070	DIPOTASSIUM ENDOTHALL	2	0	0	16,000	0
554132	LITHIUM CARBONATE	4	4	1	2,730	0
1344281	ALUMINUM OXIDE (FIBROUS FORMS)	2	1	1	207	0
191242	BENZO(G,H,I)PERYLENE	87	12	0	377	0
76142	DICHLOROTETRAFLUOROETHANE (CFC-114)	0	1	0	0.05	0
52645531	PERMETHRIN	0	1	0	0.0149	0
79221	METHYL CHLOROCARBONATE	0	1	0	0.05	0
1928434	2,4-D 2-ETHYLHEXYL ESTER	0	0	1	0.17	0
20325400	3,3'-DIMETHOXYBENZIDINE DIHYDROCHLORIDE	0	1	0	0.495	0
94360	BENZOYL PEROXIDE	0	1	0	57	0
1649087	1,2-DICHLORO-1,1-DIFLUOROETHANE	1	0	0	16	0

**Table E-6. Chemical Rankings by TWPE from DMRLTOutput2013**

PRAM Code	PRAM Code Description	Number of Facilities Reporting	Sum of TWPE
50060	Total Residual Chlorine	1612	1,510,000
951	Fluoride	244	721,000
745	Sulfide	87	477,000
80361	Methylmercury	2	457,000
1104	Aluminum	156	431,000
34247	Benzo[a]pyrene	44	401,000
71900	Mercury	320	386,000
39700	Hexachlorobenzene	16	350,000
34675	2,3,7,8-Tetrachlorodibenzo-p-dioxin	7	248,000
978	Arsenic	146	225,000
1105	Aluminum	364	204,000
1027	Cadmium	140	193,000
39100	Di(2-ethylhexyl) phthalate	50	172,000
34320	Chrysene	39	140,000
1002	Arsenic	196	131,000
1113	Cadmium	92	130,000
34242	Benzo[k]fluoranthene	36	122,000
940	Chloride	551	122,000
39516	Polychlorinated biphenyls	12	112,000
34230	Benzo(b)fluoranthene	25	94,000
1119	Copper	315	91,500
51557	Polychlorinated biphenyls	7	85,100
1042	Copper	823	81,300
1022	Boron	94	75,600
71901	Mercury	124	74,400
1147	Selenium	125	74,100
980	Iron	303	70,400
34526	Benz[a]anthracene	35	67,800
1114	Lead	193	58,700
1045	Iron	714	54,700
50901	Ethylene glycol	5	54,400
1055	Manganese	241	48,800
39400	Toxaphene	1	48,000
720	Cyanide	149	46,000
610	Ammonia as N	2034	43,600
925	Magnesium	2	40,800
1092	Zinc	808	40,400
1051	Lead	387	38,900
999	Boron	22	38,000
1056	Manganese	59	37,300
1079	Silver	38	34,000
1094	Zinc	317	33,300
981	Selenium	131	32,000
50064	Free Available Chlorine	46	27,900
30358	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	2	25,800

**Table E-6. Chemical Rankings by TWPE from DMRLTOutput2013**

PRAM Code	PRAM Code Description	Number of Facilities Reporting	Sum of TWPE
1077	Silver	70	19,500
79531	Benzo(b)fluoranthene	11	17,300
34376	Fluoranthene	33	16,200
11123	Manganese	59	16,000
81621	Sulfide	5	15,500
1046	Iron	72	13,500
937	Potassium	14	12,200
3610	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	11,600
1000	Arsenic	4	11,400
9501	Radium-226	18	9,510
1062	Molybdenum	22	8,530
718	Cyanide	13	8,440
945	Sulfate	343	7,830
1040	Copper	15	7,460
34220	Anthracene	29	7,380
998	Beryllium	25	6,260
1067	Nickel	298	5,500
1074	Nickel	153	5,360
51671	Molybdenum	1	5,160
1087	Vanadium	31	5,130
620	Nitrogen, nitrate dissolved	167	5,120
39380	Dieldrin	2	5,060
77041	Carbon disulfide	3	4,640
51173	Cyanide	21	4,590
34461	Phenanthrene	32	3,770
1106	Aluminum	46	3,280
1319	Manganese	11	3,060
1065	Nickel	2	2,950
34292	Butyl benzyl phthalate	4	2,900
722	Cyanide	39	2,690
34381	Fluorene	29	2,520
1037	Cobalt	12	2,460
927	Magnesium	38	2,360
1025	Cadmium	2	2,270
1032	Chromium, Hexavalent	97	1,950
34556	Dibenz[a,h]anthracene	21	1,880
71875	Hydrogen sulfide	3	1,730
1090	Zinc	16	1,700
949	Fluoride	6	1,690
34215	Acrylonitrile	15	1,610
1313	Cadmium	12	1,540
1034	Chromium	302	1,430
39336	.alpha.-Hexachlorocyclohexane	2	1,390
34403	Indeno[1,2,3-cd]pyrene	23	1,380
77165	Hydroquinone	1	1,360

**Table E-6. Chemical Rankings by TWPE from DMRLTOutput2013**

PRAM Code	PRAM Code Description	Number of Facilities Reporting	Sum of TWPE
621	Nitrogen, nitrate dissolved	5	1,330
1323	Selenium	23	1,250
81020	Sulfate	63	1,230
81551	Xylene	74	1,150
1129	Molybdenum	6	1,090
39330	Aldrin	2	1,090
930	Sodium	2	1,070
34694	Phenol	49	992
950	Fluoride	1	934
34469	Pyrene	34	913
34475	Tetrachloroethylene	34	909
51064	Formaldehyde	11	903
39410	Heptachlor	1	811
81313	Hydrazine	7	773
39496	Aroclor 1242	6	727
1118	Chromium	94	702
78248	Cyanide	4	584
1132	Lithium	7	540
39504	Aroclor 1254	3	537
154	Sulfate	33	515
1033	Chromium, Trivalent	22	515
1303	Zinc	18	504
1220	Chromium, Hexavalent	23	502
921	Magnesium	8	489
1257	Cyanide	6	468
1059	Thallium	28	459
78247	Chromium, Hexavalent	9	450
1306	Copper	24	423
34506	1,1,1-Trichloroethane	21	396
746	Sulfide	2	395
39110	Dibutyl phthalate	14	384
49489	Ethylene glycol	3	371
34391	Hexachlorobutadiene	7	364
39500	Aroclor 1248	3	358
1102	Tin	15	338
32102	Carbon tetrachloride	24	336
34726	Ammonia as NH3	129	319
3818	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	4	305
34501	1,1-Dichloroethylene	17	280
34601	2,4-Dichlorophenol	11	272
81848	Trichlorophenol	1	221
982	Thallium	20	211
612	Ammonia as N	2	210
609	Ammonia as N	20	202
32103	1,2-Dichloroethane	28	199

**Table E-6. Chemical Rankings by TWPE from DMRLTOutput2013**

PRAM Code	PRAM Code Description	Number of Facilities Reporting	Sum of TWPE
1318	Lead	12	186
70012	p-Chloro-m-cresol	1	185
34561	1,3-Dichloropropene	1	180
1007	Barium	109	180
34253	.alpha.-Hexachlorocyclohexane	1	168
34205	Acenaphthene	30	162
929	Sodium	28	160
34657	4,6-Dinitro-o-cresol	10	154
615	Nitrite nitrogen, dissolved (as N)	83	141
1162	Zirconium	1	140
39175	Vinyl chloride	28	128
34341	Dimethyl phthalate	9	124
46225	Chloride	6	123
4262	Chromium, Trivalent	18	114
32101	Dichlorobromomethane	14	112
71880	Formaldehyde	18	104
34396	Hexachloroethane	7	103
1154	Tungsten	2	100
34611	2,4-Dinitrotoluene	9	96.2
81364	Cyclonite	2	95.2
1128	Vanadium	4	90.3
71850	Nitrogen, nitrate dissolved	7	77.1
34413	Methyl bromide	1	73.1
39033	Atrazine	2	65.3
1097	Antimony	40	64.3
34210	Acrolein	2	60.2
939	Potassium	1	51.3
61574	Ammonia as NH3	28	51.1
34336	Diethyl phthalate	13	50.7
82057	Boron	11	48.7
9503	Radium-226	2	47.5
1268	Antimony	29	47
51058	Chromium, Trivalent	1	46.9
923	Sodium	10	45.4
39320	p,p'-DDE	1	44.4
1152	Titanium	9	44.1
34356	.beta.-Endosulfan	1	41
39180	Trichloroethylene	70	37.7
34255	.beta.-Hexachlorocyclohexane	1	33.6
34696	Naphthalene	53	32.2
1009	Barium	17	31.8
34571	p-Dichlorobenzene	15	29.9
39508	Aroclor 1260	1	29.9
1145	Selenium	6	29.6
71871	Bromine	1	26.2

**Table E-6. Chemical Rankings by TWPE from DMRLTOutput2013**

PRAM Code	PRAM Code Description	Number of Facilities Reporting	Sum of TWPE
51044	1,3-Dichloropropene	6	25.2
32106	Chloroform	106	25.1
34030	Benzene	121	24.7
32104	Tribromomethane	15	23.6
34626	2,6-Dinitrotoluene	8	23.5
39344	Lindane	4	23.4
34671	Aroclor 1016	2	21.8
39300	p,p'-DDT	1	20.7
1012	Beryllium	7	18.7
1082	Strontium	10	18.5
39488	Aroclor 1221	1	17.5
39492	Aroclor 1232	1	17.5
77571	Carbazole	2	14.9
77111	Triethylamine	2	14.2
946	Sulfate	5	13.3
619	Ammonia as NH3	22	12.9
34616	2,4-Dinitrophenol	10	12.6
34511	1,1,2-Trichloroethane	11	12.2
34010	Toluene	107	12.1
1322	Nickel	5	11.6
77089	Aniline	1	11.1
34551	1,2,4-Trichlorobenzene	10	10.7
77416	2-Methylnaphthalene	1	10.7
34541	1,2-Dichloropropane	10	10.7
34621	2,4,6-Trichlorophenol	5	10.6
51007	.beta.-Hexachlorocyclohexane	1	10.5
719	Cyanide	3	10.2
1252	Arsenic	2	9.54
82388	1,4-Dioxane	5	9.49
1005	Barium	2	8.98
11501	Radium-228	1	8.96
386	Ozone	1	8.88
32105	Chlorodibromomethane	12	8.7
39032	Pentachlorophenol	6	8.68
81524	Dichlorobenzene	4	8.19
34646	p-Nitrophenol	8	7.52
1311	Barium	1	6.18
34566	m-Dichlorobenzene	12	5.9
34536	o-Dichlorobenzene	13	5.87
34447	Nitrobenzene	9	5.73
82318	Tantalum	1	5.69
34606	2,4-Dimethylphenol	13	5.5
34200	Acenaphthylene	22	5.11
50796	Acrylamide	1	4.96
85811	Chloroethane	13	4.4

**Table E-6. Chemical Rankings by TWPE from DMRLTOutput2013**

PRAM Code	PRAM Code Description	Number of Facilities Reporting	Sum of TWPE
4240	Acetochlor	1	4.39
1308	Aluminum	1	4.37
71890	Mercury	2	4.31
78389	Tetrachloroethylene	9	4.16
61163	Propylene glycol	2	4.1
77885	Methanol	5	3.99
77015	Isopropanol	2	3.85
941	Chloride	2	3.65
34531	1,2-Dichloroethane	6	3.39
78198	Heptane	1	3.29
81651	4,4'-Isopropylidenediphenol	1	3.15
73088	4,5,6-Trichloroguaiacol	1	2.96
77004	Ethanol	5	2.77
39755	Mirex	1	2.66
34496	1,1-Dichloroethane	18	2.51
34418	Chloromethane	15	2.49
991	Arsenic, trivalent, total recoverable	1	2.39
984	Titanium	2	2.06
39930	Pyrethrins	1	1.91
39161	Alachlor	1	1.9
3824	Tributyltin	1	1.84
613	Nitrite nitrogen, dissolved (as N)	1	1.74
82052	Dicamba	1	1.66
979	Cobalt	6	1.64
82295	Chloride	4	1.44
77030	Diethylamine	1	1.41
77146	p-Cresol	9	1.24
34371	Ethylbenzene	64	1.21
1049	Lead	3	1.18
81686	cis-1,2-Dichloroethylene	1	1.12
34301	Chlorobenzene	17	1.09
34591	o-Nitrophenol	9	1.04
78391	Trichloroethylene	14	1.02
34586	o-Chlorophenol	10	0.869
71855	Nitrite nitrogen, dissolved (as N)	4	0.733
34423	Methylene chloride	37	0.649
77579	Diphenylamine	1	0.629
1030	Chromium	1	0.619
85814	Tetrachloroethylene	1	0.616
79778	Cresol	2	0.583
1084	Strontium	1	0.478
81688	Ethylene glycol	1	0.36
34438	N-Nitrosodimethylamine	2	0.295
39702	Hexachlorobutadiene	2	0.253
77093	cis-1,2-Dichloroethylene	6	0.251

**Table E-6. Chemical Rankings by TWPE from *DMRLTOutput2013***

PRAM Code	PRAM Code Description	Number of Facilities Reporting	Sum of TWPE
78204	Chlorotoluene	1	0.237
81679	Epichlorohydrin	1	0.233
77045	Pyridine	4	0.206
38676	1,2-Dichloroethylene	5	0.206
1020	Boron	1	0.182
1304	Silver	1	0.157
34728	p-Xylene	2	0.153
81549	Tetrachloroethane	1	0.151
3821	Methylene chloride	1	0.145
61209	Perchlorate (ClO <sub>4</sub> )	3	0.132
81607	Tetrahydrofuran	7	0.131
34306	Chlorodibromomethane	2	0.125
38528	Metiram	3	0.125
935	Potassium	1	0.103
49543	N,N-Dimethylaniline	1	0.0924
77804	n-Octadecane	2	0.0919
77427	n-Decane	2	0.0919
39730	2,4-D	3	0.0904
79862	Heptane	1	0.0767
4147	2-Methoxyethanol	1	0.0714
81574	cis-1,2-Dichloroethylene	4	0.0687
51046	o-Cresol	2	0.0643
1035	Cobalt	1	0.0642
81708	Styrene	3	0.0611
51001	Isobutyraldehyde	1	0.054
81552	Acetone	17	0.0535
77860	Butachlor	1	0.0405
51437	Hexane	1	0.0383
51159	Propazine	1	0.0344
85810	trans-1,2-Dichloroethylene	2	0.0296
38693	Dichlorobromomethane	2	0.0225
81585	Ethyl acetate	2	0.0223
77057	Vinyl acetate	1	0.0219
51002	n-Amyl acetate	1	0.0217
34516	1,1,2,2-Tetrachloroethane	2	0.0194
34031	Chlorobenzene	1	0.0156
77117	Isopropyl ether	1	0.0154
1085	Vanadium	1	0.0154
37371	Ethylbenzene	7	0.0145
4150	o-Dichlorobenzene	1	0.0128
61162	1,1-Dichloroethylene	2	0.0118
22417	Methyl tert-butyl ether	17	0.00836
77189	n-Butyl acetate	1	0.00784
46363	cis-1,2-Dichloroethylene	1	0.00783
34581	2-Chloronaphthalene	1	0.00737



**Table E-6. Chemical Rankings by TWPE from *DMRLTOutput2013***

PRAM Code	PRAM Code Description	Number of Facilities Reporting	Sum of TWPE
34546	trans-1,2-Dichloroethylene	9	0.00721
81553	Acetophenone	3	0.00718
81360	TNT, dissolved	1	0.00716
78122	Benzo[j]fluoranthene	1	0.00571
73207	Acetonitrile	1	0.00537
51003	1-Pentanol	1	0.00391
34259	.delta.-Hexachlorocyclohexane	1	0.00224
45013	Isopropyl acetate	1	0.00174
3864	cis-1,2-Dichloroethylene	3	0.00166
34426	Methylene chloride	1	0.00122
51073	Dichlorobromomethane	1	0.000987
81577	Isopropyl ether	1	0.000925
78356	Methyl ethyl ketone	5	0.000895
51045	.alpha.-Terpineol	4	0.000844
78133	Methyl isobutyl ketone	2	0.00082
85813	Tolytriazole	1	0.000718
34668	CFC-12	2	0.000711
34425	Methylene chloride	1	0.000628
50764	Trichloroethane	1	0.000564
77652	CFC-113	1	0.000493
81596	Methyl isobutyl ketone	1	0.000279
71800	Urea	1	0.00027
1052	Lead	1	0.000204
77493	.alpha.-Terpineol	1	0.000193
51675	Nitrogen, nitrate dissolved	1	0.000165
81595	Methyl ethyl ketone	1	0.000156
34198	.delta.-Hexachlorocyclohexane	1	0.000123
1314	Chromium, Trivalent	1	0.000105
82196	Hexamethylphosphoramide	2	0.0000892
78113	Ethylbenzene	1	0.0000244
51000	Methyl formate	1	0.0000224
34374	Ethylbenzene	1	0.000019
77135	o-Xylene	1	0.0000178
34488	CFC-11	1	0.0000161
81711	o-Xylene	1	0.0000154
51025	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	1	0.0000123
3615	4,6-Dinitro-o-cresol	1	0.00000597
77042	Dimethyl sulfoxide	1	0.00000415
50092	Mercury	8	0.00000337